THE IRON AGE

New York, August 8, 1918

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How Moving Photomicrographs Are Taken

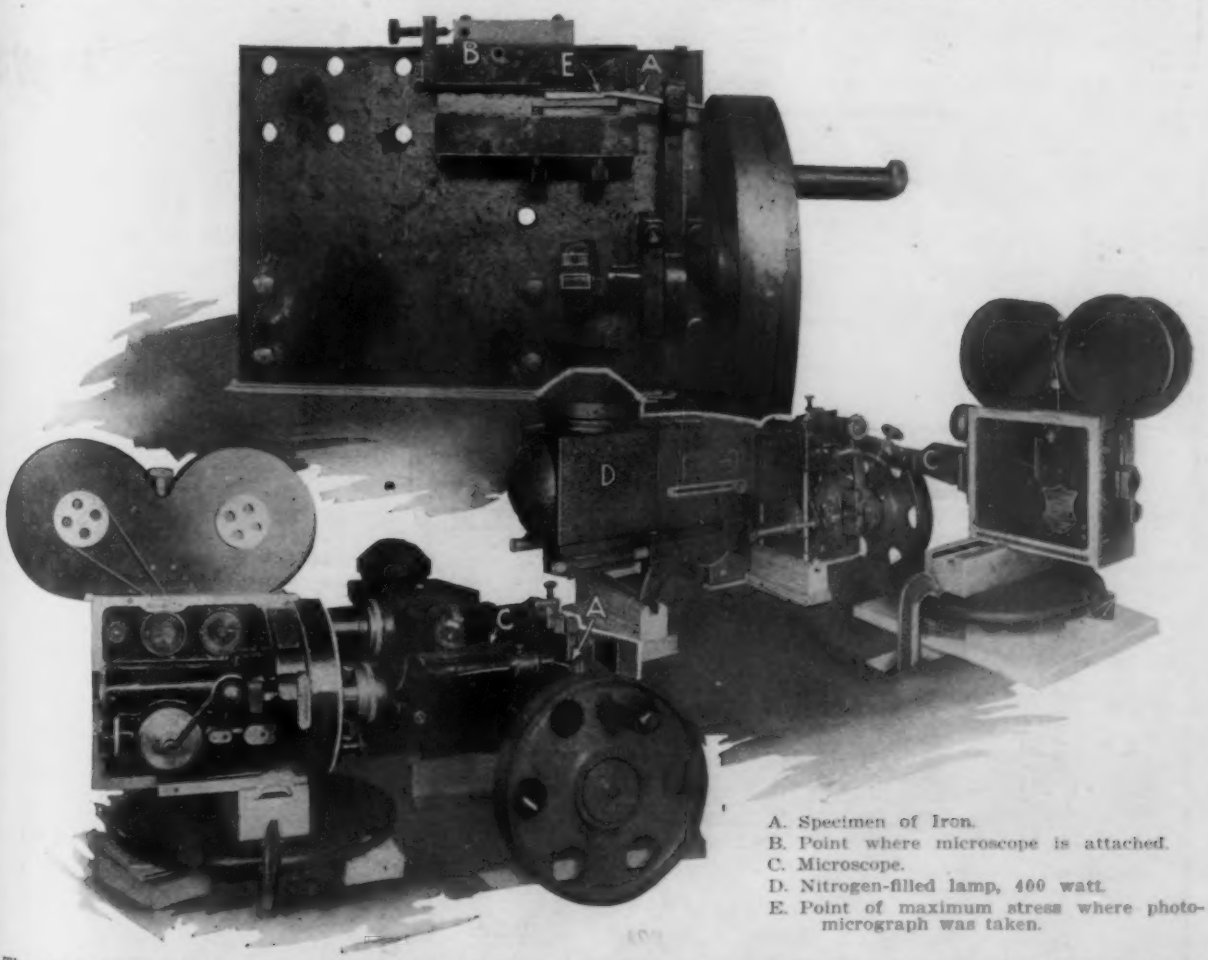
Apparatus for Recording the Gradual Changes in a Metal's Structure When Subjected to Repeated Bending Stresses—Possible Applications

REFERENCE was made in THE IRON AGE of July 4 to the fact that the moving picture had entered a new field. Not only the novelty of the event was commented on, but emphasis was placed on the probable metallurgical importance and practical value of this adaptation.

THE IRON AGE is able to present illustrations of the machine which was used to bring a wrought iron test piece under repeated stress as well as the apparatus used for taking the moving photomicrographs. A reproduction of sections of the original film early in the experiment and in its later stages, where the crack has appeared, is also shown. Of decided interest are the still photomicrographs taken at various periods in the disintegration.

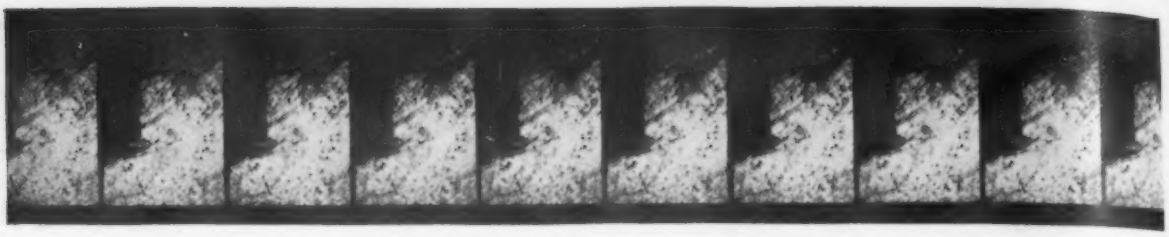
Credit for this unusual and striking achievement is due to Prof. H. F. Moore of the University of Illinois, Urbana, Ill. The film was presented for the first time publicly at the annual meeting of the American Society for Testing Materials at Atlantic City in June. It is probably the only successful attempt of the kind ever recorded. It was witnessed by an admiring audience of technical and practical men and, on request, was repeated the next day.

Though applied to wrought iron because of the large crystals and distinct markings as well as

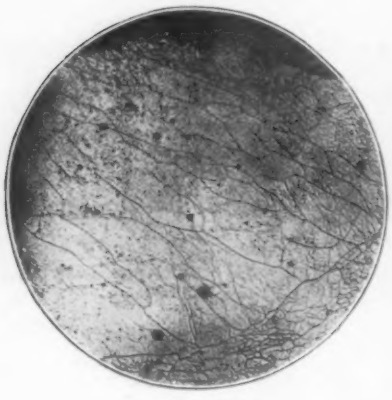


A. Specimen of Iron.
B. Point where microscope is attached.
C. Microscope.
D. Nitrogen-filled lamp, 400 watt.
E. Point of maximum stress where photomicrograph was taken.

The upper illustration is the machine used for producing repeated stress in flexure in a piece of metal. The number of bends are counted by a commutator, the revolutions of the w eel moving the connecting rod, which bends the strip of metal. The other two illustrations show the attachment of the microscope and the moving picture camera as well as the method of illumination.

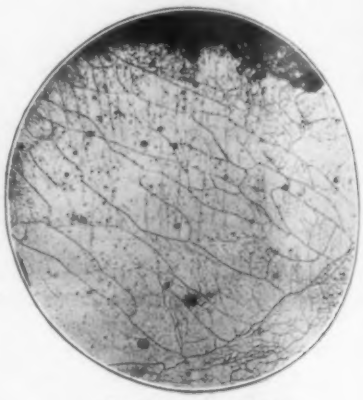


Strip of Prints from Film, Showing Development of Small Cracks or Slip Lines, Magnification About 20 Times, Taken 16 Per Second. Exposure 1/50 Second.

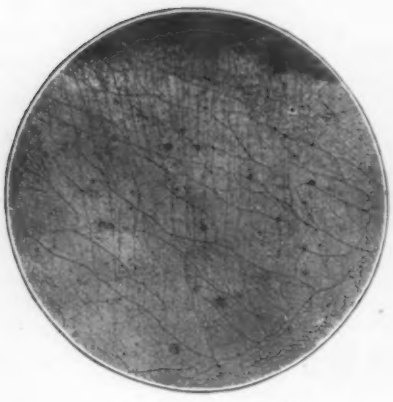


Unstressed.

Stressed 16 Times.



Stressed 27 Times.



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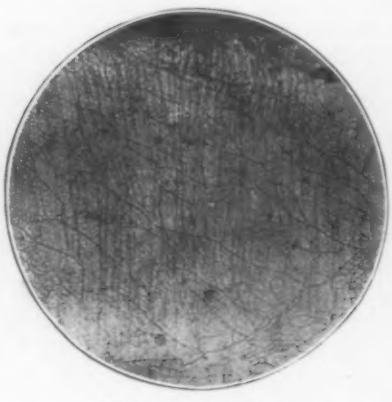
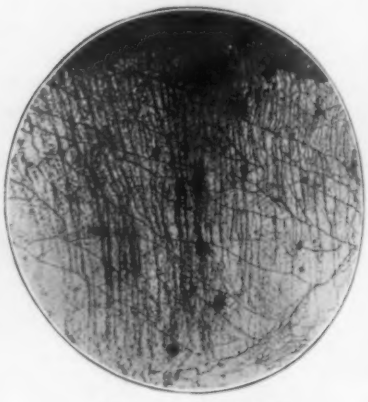
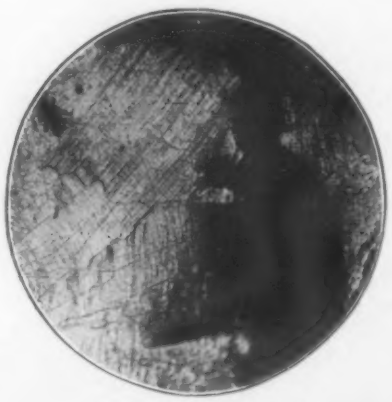


Stressed 201 Times.



Stressed 424 Times.

Series of seven "still" photomicrographs showing the development of slip lines in a specimen of iron. These were taken with the apparatus shown on the first page, using an ordinary photomicrographic camera in place of a motion picture camera. The above are reduced nearly one-half from an original of 100 diameters. The gradual development of the deterioration of the metal is evident from the lines. The number of stresses are indicated under each photomicrograph.



The Developed Crack.

Strip of Prints from Film Showing Development of Large Crack.

because of its easy deformation under stress and hence clearly visible under magnification, it is not at all improbable that the principle will be later applied to steel, non-ferrous metals and other alloys. This may solve many problems now not fully understood. It has already been stated that this new device may determine just how steels begin to deteriorate under stress and it may lead to a scheme of heat treatment prolonging the life of certain steels and rendering them less liable to fatigue.

The following interesting opinion on one of the possible applications of the micro-motion picture scheme comes from a prominent American metallographist:

"The study of breaks can be made thoroughly and knowledge can be gained regarding the appearance of a polished surface of the material at various stages from the beginning of the application of the load to failure. We may be able to tell, for example, by the appearance of the surface under the microscope whether a material has withstood 30 per cent or 90 per cent of its effective life. If the characteristics are sufficiently pronounced, which experience alone can tell, then it will be possible to polish a section of a cable in use and examine it with a microscope from time to time and determine whether that section at least is nearly ready to fail or whether it shows no indication of failure.

"The keynote of the idea is that failure takes place gradually, beginning the moment a piece of metal is put into use and ending only when the piece breaks. If the surface appearance also changes gradually, it will have some relation to the degree of useful life remaining in the metal part. If we can co-relate the appearance of the surface with the remaining useful life we will have accomplished exceedingly practical results in the saving of material and possibly life. This will probably not be obtainable in the very near future, but it is something which we may expect possibly during our own generation."

The optical and photographic arrangements, whereby the taking of these moving photomicrographs was made possible, were perfected by A. G. Eldredge, head of the department of photography of the University of Illinois.

IMMENSE WAREHOUSES

Projects Will Involve Expenditure of Many Millions by Government

WASHINGTON, Aug. 6.—A summary of the projects for storage warehouse and other construction, to facilitate the speedy handling of materials at storage points for the use of the Army, either already erected, or in the course of construction in this country, shows an aggregate expenditure of $218,000,000. When completed these projects will provide approximately 33,800,000 sq. ft. of warehouse space, additional wharves and piers, and improved harbor depths at various points. All work of this nature is done under the supervision of the Construction Division of the Army. The majority of the projects will be completed this year. With few exceptions, they are permanent structures of concrete, brick and steel.

Construction is now under way at the following points: New Orleans, Boston, Brooklyn, Chicago, St. Louis, Schenectady, N. Y., New Cumberland, Pa., Columbus, Ohio, Charlestown, S. C., Norfolk, Va., Philadelphia, Newport News, Va., and Little Rock, Ark. Warehouses have been completed at Philadelphia, Pittsburgh, Baltimore, Hoboken, Jeffersonville, Ind., Port Newark, N. J., Americus, Ga., San Antonio, Dayton, Ohio, Richmond, Va., Chicago and Middletown, Pa.

The Construction Division has provided 4,000,000 sq. ft. of warehouse space for the storage of ordnance supplies, such as ammunition, guns, etc. The space has been apportioned to various sections of the country. For military reasons, locations of the warehouses, magazines and buildings of a similar nature cannot be given. Fitted into the ordnance warehouse space are 75 miles of trackage and 9000 lineal feet of dock and wharf frontage. In addition to this, barracks for 20,000 men in the ordnance have been provided and 15 miles of vehicular roadway have been built. All of this has cost in the neighborhood of $25,000,000. There are also under construction $10,000,000 of ordnance warehouses that will provide 2,500,000 sq. ft. of space. Most of these will be completed this year.

The largest of the warehouse projects is now being constructed at Brooklyn, N. Y. It is estimated that, when completed, it will cost approximately $40,000,000 and provide 3,850,000 sq. ft. of storage space. There are two great buildings, each of nine stories. Building "A" is 200 ft. x 980 ft. and has 27 elevators, each with a capacity of 10,000 lb. Building "B" is 206 x 980 ft. and has 36 elevators, each with a capacity of 10,000 lb. Both buildings are of reinforced concrete and steel construction. There will be three piers, 150 x 1257 ft. and one pier measuring 70 x 1300 ft. Five slips will be provided, three of which will be 2250 x 1300 ft., one, 145 x 1300 ft. and one, 185 x 1300 ft. The main dock between building "A" and the piers will be 260 x 1350 ft. The three main piers will be connected to building "A" by bridges at the second story level. These terminals are to be served by railroad yards accommodating 1480 cars. The estimated date of completion is July 1, 1919, although half of the warehouse space and one slip and pier will be ready for operation Oct. 15, 1918. The work was started May 17, of this year.

Ferguson Steel & Iron Co. Building Ships

Keels for the first two sea-going tugs were laid last week at the new Ferguson Steel & Iron Co.'s shipyard on Abbott Road, Buffalo. The company has a contract with the Navy Department for the construction of six sea-going tugs 150 ft. long, of 1000-ton burden. It has also received a contract from the Government for the construction of 24 barges for use on the New York State barge canal. The tugs will have engines capable of generating 1800 hp., but the barges will be provided with no motor power.

The Ferguson shipyard covers 32 acres. It is strictly modern in design and layout and all plans have been formulated with the one idea in mind of turning out the boats as quickly as possible to meet the exigencies of the Government.

The office buildings at the yard are completed, the power house is in operation, and the warehouse, woodworking shop and machine and metal shops are under construction. Tracking facilities have been provided and actual work on the first two tugs has been started. The 32 acres of the shipyard added to the acreage of the main plant on Bailey Avenue gives the company about 60 acres for its operations. This acreage allows for expansion as apt to come at the shipyard as it has at the main plant on Bailey Avenue, which is 13 times as large as it was at the beginning of the company's operations in 1913.

In a resume of the industrial resources of St. Louis prepared for the forthcoming city directory, W. B. Weisenburger of the St. Louis Chamber of Commerce says the products of the steel casting foundries of St. Louis during 1917 had a value of $63,000,000. The greater portion of this output, he says, represents castings for the manufacture of railroad cars and locomotives. In addition, he estimates $30,000,000 worth of cars and $7,000,000 worth of other railroad equipment were manufactured at St. Louis during the year.

Labor Board's Award in Bethlehem Case

Eight-Hour Day for Machinists, with Right to Organize and to Bargain Collectively—Bonus System Ordered Revised

WASHINGTON, Aug. 6—The National War Labor Board, in one of the most extraordinary and certainly in the most important decision it has yet rendered, makes a sweeping finding against the Bethlehem Steel Co. on all points in the controversy between that concern and its employees who have recently been on strike. While the board states that the decision "affects approximately 28,000 workers," as a matter of fact it directly and indirectly affects labor conditions in the great majority of manufacturing plants not thus far thoroughly unionized, and will encourage union leaders everywhere to seize upon the national war emergency to organize every plant heretofore maintained as a non-union or open shop.

Organization and Collective Bargaining

The official syllabus of the board's finding states that the decision "grants the workers the right to organize and to bargain collectively, orders the revision or complete elimination of the bonus system now in operation at the plant, the revision of piecework rates and the establishment of a designated, guaranteed minimum hourly wage rate for some 5000 machine shop workers in conformity with one of the scales now being applied by the War and Navy departments; applies the basic eight-hour day with payment of time and half time for all overtime and double time on Sundays and holidays, and provides for just overtime payment to pieceworkers; calls upon the company to pay men and women alike when performing the same work and to allot women no tasks disproportionate to their strength."

It further provides that the "piecework rates shall be revised by the plant management co-operating with committees of the workers and representatives of the Ordnance Department which is the department principally interested in the product of the plant; and also that a permanent local board of mediation and conciliation consisting of six members, three chosen by the company and three by the workers, be established to effect agreements on future disputed points and on disputed points not covered in the award." This board is to be presided over by a chairman to be selected by and to represent the Secretary of War. In addition, an examiner of the War Labor Board is to be assigned to interpret and to enforce the award, being specifically instructed to investigate and report to the board upon all charges of discrimination against union men by the company.

Specific wage increases are granted to the 440 electrical workers who made an issue of their wage rates. They demanded increases to 67½c. an hour for electricians and at least 40c. an hour for helpers. The board awarded 67½c. an hour for first class electricians, 62½c. an hour for second class electricians and 40c. for helpers. Wages for other workers will be fixed through the system of bargaining and co-operation between the company and the men provided for in the award.

As a basis for its finding the board presents the following summary of its investigation of conditions at the Bethlehem Steel Co.'s plant:

Early Hearings

The case came before the War Labor Board on May 7 following a series of strikes by machinists and electrical workers and after various Government agencies bent on mediation had exhausted their efforts to effect a settlement. Since that date the War Labor Board has conducted a thorough investigation into the relations of the company and its workers, both by hearings of facts and investigations of conditions. Hearings were first held in Washington by a section of the board composed of Herbert H. Rice, vice-president of the General Motors Co. and Thomas J. Savage, executive officer of the International Association of Machinists. The section disagreed, however, and the case came before the entire board which instructed the secretary, W. Jett Lauck, to conduct an investigation in the field. Hearings were held in Bethlehem by Mr. Lauck and by H. S. Hanna, chief examiner, and these were supplemented by the work of trained investigators.

Stated generally, the workers demanded the application of the basic eight-hour day with time and half time for overtime with double pay for Sundays and holidays; the right to bargain collectively through committees; prohibition of discrimination of any kind because of trade union activities; readjustment of the hourly and piecework rates on the basis of the rates paid in the shipyards of the Bethlehem Steel Company; and elimination of the bonus system of payment. It was contended by the machinists' representatives that the bonus system, with the alleged practice of continually changing rates under it, operated to hamper production because the men do not understand the method by which their pay is computed. They asserted that the bonus method was in effect a substitute of time and half time for overtime. On the other hand, the company maintained that the bonus system offered a premium for increased production and that the time and one half was paid independent of the bonus.

Concerning collective bargaining, representatives of the men said the controversy would have been settled had the company chosen to meet with committees of its own workers. The president and vice-president of the company stated that the custom of the company in dealing individually with its employees would not be changed and that no committee in the choice of which the management had not some voice would be received.

No Closed Shop Asked

The machinists said the question of collective bargaining was an issue as vital to them as the methods of payments and conditions in the shops; for it was, they said, the refusal of the company to meet a committee of the workers, seeking to discuss the question of overtime payment at the time the working day was changed from eight hours to ten hours and twenty-five minutes, that caused the strikes at the plant. They made no demands for a closed union shop or for union recognition, but merely that the company receive committees of its own workers selected by their fellow workers. They presented evidence to support their assertion that the machinists' union was denied the privilege of meeting in any hall or meeting place in the city of Bethlehem and that its leaders and members were discriminated against in various ways including dismissal from the shops.

List of Undesirable Employees

It was charged that a number of workmen were taken from the shops by the police because they held membership in the machinists' union. A list of names of 91 union workers was submitted by the workers. They declared it to be a copy of a list furnished the employment officers at the various shops. It was captioned "These men are undesirable and should not be employed." Several witnesses testified that they had been discharged in one shop and secured employment under false names in others. One of these workers told his story in the presence of Vice-president H. E. Lewis,

who told him to go back to the original shop under his right name and promised the board that he would penalize a particular foreman against whom charges of unfair dealing had been made. It was also brought out that J. A. Kresge, proprietor of the Colonial Hall, leased a portion of the building for a meeting of the machinists but later refused to permit the meeting on the ground that he had been instructed by the chief of police against permitting labor unions to meet in the building. The chief of police admitted this on the witness stand. Archibald Johnston, vice-president of the company, is the mayor of the city.

The attitude of the company with respect to collective bargaining, as expressed by Eugene G. Grace, the president, was that the company was willing to meet employees individually but not through committees or by any methods "savoring of organization." As to charges of discrimination against union workers, Vice-president Lewis said, "So far as the company knows, there is no such thing."

The machinists employed at Bethlehem held their meetings in the city of Allentown. Following the first hearing of the case in Washington, they caught a Pinkerton detective in their meeting. The man was arrested and fined $50 by the mayor of Allentown.

The investigations of the board revealed conditions that undoubtedly were reflected in lost production of important war materials. It was discovered, for instance, that during the year ended May 31, 1918, the company employed 57,423 workers while during the same period 56,771 left for other employments. It was stated during the Bethlehem hearings by Vice-president Lewis that the labor turnover for the month of May, 1918, was 10.39 per cent or at the rate of 118 per cent per year.

A charge made by the men, testimony in support of which was turned over to the War Department, was that the company was employing the draft law to coerce workers into remaining at the plant.

The importance of the case from the standpoint of the Government's war program was emphasized by representatives of the War Department in several communications to the board.

Following is the board's decision and award in full:

Text of the Finding

The case of the Machinists and Electrical Workers vs. Bethlehem Steel Co. is of unquestionable importance from the standpoint of the war. It appears beyond doubt that the dissatisfaction among the employees of the company has had and is having a seriously detrimental effect upon the production of war materials absolutely necessary to the success of the American Expeditionary Forces. This was clearly developed in the testimony of the officials of the Ordnance Department.

The main cause of the dissatisfaction is a bonus system so complicated and difficult to understand that almost one-half of the time of the hearings was consumed in efforts to secure a clear idea of the system. The absence of any method of collective bargaining between the management and the employees is another serious cause of unrest, as is also the lack of a basic guaranteed minimum wage rate.

After having carefully reviewed all the evidence in the case, the Board makes the following findings:

1. *Piece Rates, Bonus and Basic Hourly Rates.*

(a) That the bonus system now in operation should be entirely revised or eliminated; that piece-work rates should be revised also, and that a designated guaranteed minimum hourly wage rate be established in conformity with one of the scales now being applied by the War and Navy department as most nearly fits the conditions in this particular case.

(b) That any necessary revision of piecework rates shall be made by an expert in co-operation with the Ordnance Department, the plant management and a committee from the shops, such expert to be selected by the National War Labor Board and with the approval of the Secretary of War.

(c) That the piece rates thus established shall not be reduced during the period of the war.

2. *Overtime.*

That the principle of daily overtime should be compensated at the rate of time and a half and double time on Sundays and holidays. That in the fixing of piece rates provisions be made for overtime payment such as are now provided in the case of time workers. The application as to the definition of what days constitute holidays and the division of the weekly work periods can in the opinion of the Board be best settled by conference between committees hereinafter provided and the management of the plant.

3. *Committees.*

The right of the employes to bargain collectively is recognized by the National War Labor Board; therefore the employes of the Bethlehem plant should be guaranteed this right. The workers at the Bethlehem plant should use the same method of electing committees as is provided in the award of the National War Labor Board for the workers of the General Electric Company at Pittsfield.

4. *Employment of Women.*

That on work ordinarily performed by men, women must be allowed equal pay for equal work and must not be allotted tasks disproportionate to their strength.

5. *Military Exemption.*

That the evidence relative to the complaints of the workers that foremen and other subordinate officials of the plant have made improper use of the Selective Draft Act shall be referred to the War Department for such action as may be warranted by the facts and the law.

6. *Electrical Workers.*

The board finds in the case of the electrical workers that the following rates should be established: First class, 67½c. per hour; second class, 62½c. per hour; helpers, 40c. per hour. Overtime provisions should be the same as hereinbefore specified.

7. *Other Departments.*

That wages and working conditions of other departments and crafts shall be considered and adjusted by the committees provided for in paragraph b, sub-section I.

8. *Local Board.*

That a local board of mediation and conciliation, consisting of six members, shall be established, three members of which shall be selected by the company and three by the employes, for the purpose of bringing about agreements on disputed issues not covered by this finding. In the event of the local board failing to bring about an agreement, the points at issue shall be referred to the National War Labor Board. The members of the local board shall be compensated for their services by the parties whom they represent. This board shall be presided over by a chairman who shall be selected by and represent the Secretary of War.

9. *No Reductions.*

The revision of wages or earnings provided for in this award shall in no case operate to reduce the wages or earnings of any employee.

10. *Discrimination.*

The examiner hereinafter provided for shall investigate the charges of discrimination, and shall report his conclusions with recommendations in each unsettled case to the National War Labor Board and to the Company.

11. *Examiner.*

The National War Labor Board shall detail an examiner to supervise the application of this finding. The examiner shall hear any differences arising between the parties in respect to this finding, from which an appeal may be taken by either party to the National War Labor Board. Pending the appeal the decision of the examiner shall be enforced.

12. *Duration.*

This finding is to take effect Aug. 1, 1918, and shall be effective for the duration of the war, except that either party may reopen the case before the board at periods of six month intervals for such adjustments as changed conditions may render necessary.

The board desires to point out to both parties to this controversy that the questions raised and for which the board has endeavored to find solution have largely to do with matters which will require a reasonable time to satisfactorily adjust, and that in view of the vital importance of the output of the Bethlehem Steel Co. both sides should address themselves with patience and good spirit to finding fair and reasonable adjustments of the matters to which the board here directs attention.

Otto Kafka, ex-president Vulcan Steel Products Co., an exporting company at 42 Broadway, New York, secretary Otrophon Steamship Co., and organizer of the corporation known as the Union Steel Products Co., was arrested by agents of the Department of Justice Aug. 3. Kafka, who is an Austrian subject of Bohemian birth, was taken into custody charged with being a dangerous enemy alien, and locked up in the Raymond Street jail.

No Additional Reservoir of Ship Steel

War Industries Board's Action on Mr. Schwab's Request—Ample Supplies Expected—Railroads to Take Bessemer Rails

WASHINGTON, Aug. 6.—If further evidence were necessary as to the acute condition of the steel supply, as viewed by official Washington, it was furnished during the past week when the War Industries Board, at a fully attended meeting, denied the request of Chairman Hurley of the United States Shipping Board and Director-General Schwab of the Emergency Fleet Corporation to supply the shipyards of the country with a "cushion" of 250,000 tons of steel plates to be delivered during the current quarter in addition to the current allotment of 50,000 tons per week. When Mr. Schwab, without any attempt at concealing his disappointment at the action of the board, submitted a compromise proposition that 10,000 tons per week be added to the regular allotment for the coming three months, the board declined to give an unqualified pledge of the amount desired, but promised to furnish as much extra tonnage of steel as possible "with due consideration for the increasing demands for steel from the other departments of the Government." Mr. Schwab and Mr. Hurley were forced to content themselves with this qualified promise and will await such action as the Director of Steel Supply may be able to take in the way of furnishing additional steel after the revised estimates of the several Government departments have been submitted to the War Industries Board.

Reasons for a Reservoir of Plates

Mr. Schwab's request for a "cushion" of steel was based on his earnest desire to establish a reservoir of plates and shapes of such proportions as would render the steel shipbuilding yards of the country independent of weather conditions, transportation interruptions and other vicissitudes that may be expected with the close of navigation and the suspension of numerous producing activities. The desirability of such a reservoir would hardly need to be argued in normal times, and even to-day the War Industries Board would be disposed to grant the Director-General's request were it not for the fact that such an amount of steel impounded in a "cushion" or reservoir or "bank" of any kind might mean the suspension of many small but important industries. The War Industries Board now takes the position that, while foresight and prudence and sound judgment in preventing shortages in material for shipbuilding, for ordnance production and for other war work were never more acutely needed, nevertheless the great problem before the Government today is to develop such scientific hand-to-mouth systems as will reduce to a minimum all reserves of precious materials and will give all the war activities of the Government as nearly as possible 100 per cent of supplies without sacrificing a ton of needed material to furnish a factor of safety that is not absolutely essential.

Now Over 1,000,000 Tons in Reserve

While no official statement has been made on the subject, it is understood to be the opinion of the leading members of the War Industries Board that, even if it is not found possible to give Mr. Schwab all the steel he wants, there will be no break in the shipbuilding program for lack of material. It is understood that very considerable reservoirs have been built up in a number of the leading yards, and a circumstantial report has been current during the past week that these reservoirs now exceed a round million tons of plates. To offset this accumulation there are shortages in certain yards and there have been rumors of suspension of work in one or two yards for lack of steel. Mr. Schwab has promised to work out a careful readjustment of the steel now under the control of the Emergency Fleet Corporation and the members of the War Industries Board are confident that in doing so the Director-General will provide in large part a solution of the present vexing problem.

The readjustment of steel supplies in the yards of the Pacific, Atlantic, Great Lakes and Gulf will be complicated by the fact that within the next ninety days the yards in the extreme north, and especially the establishments on the Lakes, will begin to plan for the winter, which will mean a considerable curtailment in current launchings; and while the coming winter will doubtless see unprecedented activity in the Lakes shipyards and the utilization of ingenious methods, never before resorted to, to keep the work going, there must necessarily be a falling off in completed steel tonnage. Every effort will be made in this connection to increase the productivity of the yards which can maintain normal operations during the winter and there will doubtless be more or less migration of skilled labor from the North to the South to keep up with this phase in the development of the shipbuilding program.

Mr. Schwab's request for a "cushion" of steel has served as a suggestion to the War Industries Board that in many of the estimates submitted by the various Government departments of steel to be used during the last six months of the current calendar year a similar factor of safety has been included and a vigorous admonition has been given to all officials in charge of the manufacturing operations of the Government outside of shipbuilding to eliminate all reserves and to prune their figures not only to actual requirements, but to necessary deliveries within the period covered by the schedules. The Director of Steel Supply already has evidence that certain estimates submitted to him have contained safety factors, especially in the matter of advanced delivery dates, and it is possible that a careful overhauling of all the Government's requirements may serve to release a considerable tonnage of steel. That this will not go very far toward relieving the situation, however, is indicated by the constantly increasing demands for steel for new work.

But How Exact Are the Estimates?

It will be recalled that when the automobile manufacturers conferred with the War Industries Board a fortnight ago Mr. Baruch told them that the Government requirements for the last six months of the current calendar year would approximate 20,000,000 tons, while the productive capacity of the industry was only 16,500,000 tons, leaving an apparent shortage of 3,500,000 tons. At a conference held during the past week and participated in by Fuel Administrator Garfield and representatives of the Shipping Board, the Railroad Administration and the War Industries Board, to consider the apportionment of the available supply of bituminous coal, the representatives of the War Industries Board informed the Fuel Administrator that the various Government departments estimated their steel needs for the year at 22,000,000 tons, as against the present capacity of only 16,000,000 tons of finished steel. As it is estimated that each ton of steel requires nearly five tons of coal in its manufacture and transportation, [This estimate is between one and two tons too high.—EDITOR] it was, therefore, apparent, that to supply the necessary steel for ships, shells, rails and other war material there would be required 110,000,000 tons of coal. Thus, within the period of a week, the steel estimates of the Government departments increased 2,000,000 tons, while reports of the present capacity of the iron and steel industry showed a shrinkage of 500,000 tons. [Probably 18,000,000 tons of finished material is nearer the present rate of output than 16,000,000 tons.—EDITOR.] The fact is that not a day passes without a heavy addition to the Govern-

mental requirements for steel, General Pershing's requisitions being not only large but of the most urgent character. Within the last week the War Department has ordered 510 locomotives for military railroads in France from the Baldwin Locomotive Works, at a total cost of about $25,000,000, and during the coming week orders will probably be placed for 10,000 freight cars for service on these roads.

Roads Must Take Bessemer Rails

Mr. Replogle is receiving the heartiest possible cooperation from all the departments in his effort to keep requisitions for steel down to absolute requirements for war purposes. The Railroad Administration, while reluctant to substitute Bessemer for open-hearth steel for rails, is understood to have accepted the decision of the War Industries Board that it must use 100,000 tons of Bessemer rails this year and take a large part of its 1919 quota in Bessemer rails, using them on the small railroad systems now under Government control and for sidings, break-up yards, and other purposes where the open-hearth rail is less essential.

Steel for War Department Ships

The War Industries Board during the past week stopped an important leak in the steel supply by an order which practically places under control of the Emergency Fleet Corporation all vessel construction except for the Navy. The War Department, having experienced considerable difficulty in obtaining material for construction of several vessels building for the account of the Army, appealed to the Priorities Committee for assistance. Commissioner Parker thereupon convened a meeting of representatives of all the agencies of the Government interested in the building of watercraft, as a result of which the following resolutions were adopted:

1. Each Government agency shall prepare its own plans and specifications for such ships or other watercraft as it may require, conferring and collaborating from time to time with other interested agencies to the end that uniform standards as nearly as practicable shall be adopted.

2. If an agency of the Government other than the Emergency Fleet Corporation desires and requests it, the said corporation will, where practicable, undertake to construct, or to have constructed, proposed vessels according to the plans and specifications prepared by the first-named agency.

3. In any event no contracts for the construction of vessels will be placed by any such Government agency until they have been cleared through the Emergency Fleet Corporation and through the War Industries Board. In the event of disagreement between the agency proposing the construction and the Fleet Corporation the controversy shall be adjusted or decided by the War Industries Board.

While pursuing this course the activities of all the different agencies of the Government interested in the construction of watercraft will be eliminated and conflicts in supplies, materials, transportation, power, fuel and labor will be avoided. The Director of Steel Supply will also be able to determine more accurately the necessity for supplies of steel that may be requested for vessels needed by the various departments.

Closer Restriction of Exports

The War Trade Board has taken important action that will give the Government a closer supervision of the manufacture of all products, including iron and steel, for export. For some time past an informal ruling has been in force, as a result of which manufacturers of iron and steel articles for export have had great difficulty in procuring materials without first obtaining from the export division of the War Trade Board a formal license to ship to the Allied or neutral nations. The War Trade Board has now adopted a blanket regulation to the effect that all applications for export licenses for shipment which are (a) destined to the United Kingdom, France, Italy or Belgium, either directly or by way of any other country, or (b) destined to any country by way of the United Kingdom, France, Italy or Belgium (except shipments destined to Switzerland by way of France or Italy), will be refused "if the applicant subsequent to Aug. 12, 1918, and prior to the issuance of the license applied for, shall purchase or otherwise acquire or commence to manufacture or produce or fit the articles specified in the application for the fulfillment of a specific export order."

In explanation of this regulation the board announces that it is its policy "to discourage and prevent exporters purchasing, manufacturing or producing articles for the fulfillment of specific export orders until an appropriate export license has been issued." The attention of the War Trade Board has been directed to a number of instances in which manufacturers before obtaining export licenses have made articles for specific export orders which were useless for domestic consumption but which under the regulations of the War Trade Board could not be exported. It is essential for the proper conservation of commodities in the United States that this practice be stopped, and it is the purpose of the War Trade Board to refuse licenses to exporters who violate this policy.

Chain Conservation

A campaign of education for the conservation of chain, to be carried out with the public through recognized effective trade channels, is planned by the War Service Committee of the chain manufacturers. Decision to take this step as a war measure followed conferences by the War Service Committee with John C. Schmidt, chief of the Chain Section of the War Industries Board; A. W. Shaw, chairman of the Conservation Division; and A. J. M. Baker, of the Priorities Division. A number of items leading to conservation were presented to the committee for examination and consideration to be followed by a report and recommendations. The committee discussed with Mr. Baker questions of requirements for priority which will be sought by the chain manufacturers in the production of essential chain. Members of the committee are C. M. Power, American Chain Co., New York; Stanton B. Pock, Link-Belt Co., Philadelphia, and A. B. Way, Bridgeport Chain Co., Bridgeport, Conn.

Preparing to Make War Material

ST. LOUIS, Aug. 5.—Marvin E. Singleton, recently appointed district chief for the St. Louis branch of the Ordnance Department, said, upon his return from Washington: "All of the Western States, with the exception of Iowa, as far as the Pacific Coast, together with the southern half of Illinois, will deal with the St. Louis office in matters relating to the manufacture of guns of all calibers, shells, automobiles, trucks for military use and other ordnance.

"The purpose of the establishment of a district headquarters here is to provide manufacturers with an accessible center for information and assistance from the Government. With an engineering staff, we can quickly provide all the technical data required, and the financial negotiations heretofore transacted through Chicago and Washington can be completed in St. Louis.

"The bona fide ordnance manufacturers in the St. Louis district undoubtedly will be kept busy as there are many districts in the East that cannot handle any more work. Any manufacturer capable of following the blueprints and specifications of the Government will get plenty of work.

"Labor problems in addition to being handled by the Department of Labor also will come under our supervision. Ordnance Department mediators will be attached to the St. Louis office for this purpose."

The financial division of the St. Louis branch of the Ordnance Department, it is announced, will carry a bank balance of $4,000,000 to $5,000,000 at St. Louis so as to make immediate payment to munition manufacturers on the completion of contracts. Heretofore such payments were made from Washington.

The name of the Sidney Tool Co., builder of lathes and woodworking machinery, Sidney, Ohio, has been changed to the Sidney Machine Tool Co.

Board Declines to Establish Minimum Wage

National Body Will Decide by Circumstances Prevailing in Different Cases—Wearing of Trade Union Button Approved

WASHINGTON, Aug. 6.—Establishment of a minimum wage for industries has been rejected by the National War Labor Board. This ends a long controversy over a question of vital interest both to employer and employee. Strong efforts have been made to induce the board to fix a minimum wage which would be applied generally throughout the country as a basis for the determination of labor claims.

The resolution rejecting this program was written by former President Taft, and submitted jointly by Mr. Taft and Frank P. Walsh, the joint chairmen of the board. The resolution declares that the board will be guided in the determination and application of a fair living wage by the individual circumstances to be ascertained in each case as it arises. It further invites the attention of both capital and labor to the wisdom of composing their differences upon the basis of the principles and policies which the board has approved and which were promulgated by President Wilson in his proclamation of April 8, 1918.

Opposed to Unjust Profits

The War Labor Board's resolution also announces a policy of opposition to unjust profits on the part of capital as well as to unreasonable demands on the part of labor. It declares that capital should have only "such reasonable revenues as will assure its use for the world's and the nation's cause." For labor, the resolution declares that "its physical well-being and its physical and mental effectiveness, in a comfort reasonable in view of the exigencies of the war, should likewise be assured."

The adoption of the resolution marks the end of a lengthy discussion of the question of declaring and establishing a fixed amount as the minimum to be paid any workman in the United States.

It reaffirms, however, the principle that the worker is entitled to a wage sufficient to sustain himself and his family in health and reasonable comfort and restates the purpose of the board to apply the principle in each of the cases to come before it for decision.

Declaration of Principles

Following is the resolution as passed unanimously by the board:

Resolved, That the National War Labor Board deems it an appropriate time to invite the attention of employers and workers alike to the wisdom of composing their differences in accord with the principles governing the National War Labor Board, which were approved and promulgated by the President in his proclamation of April 8, 1918.

That this war is not only a war of arms, but also a war of workshops; a competition in quantitative production and distribution of munitions and war supplies; a contest in industrial resourcefulness and energy.

That the period of the war is not a normal period of industrial expansion from which the employer should expect unusual profits or the employees abnormal wages; that it is an interregnum in which industry is pursued only for common cause and common ends.

That capital should only have such reasonable returns as will assure its use for the world's and nation's cause, while the physical well-being of labor and its physical and mental effectiveness in a comfort reasonable in view of the exigencies of war, should likewise be assured.

That this board should be careful in its conclusions not to make order in this interregnum based on approved views of progress in normal times which, under war conditions, might seriously impair the present economic structure of our country.

That the declaration of our principles as to the living wage and an established minimum should be construed in the light of these considerations.

That for the present the board or its sections should consider and decide each case involving these principles on its particular facts, and reserve any general rule of decision until its judgments have been sufficiently numerous and their operations sufficiently clear to make generalization safe.

Considering Eight-Hour Day

The War Labor Board is still considering the advisability of the practically universal adoption of the 8-hr. day.

Following its announcement of the rejection of a minimum wage, the War Labor Board laid down a number of interesting principles in the decision of a series of traction wage controversies. After increasing the wages of pitmen, trackmen, oilers, and similar employees of these companies, at the same ratio as the increases granted conductors and motormen, the War Labor Board announced:

Even this increase, it was found by the arbitrators, did not provide these men with a wage deemed sufficient under the living wage principle governing the National War Labor Board and the arbitrators therefore fixed 42 cents an hour as a general minimum for these men.

The board announced substantial increases in all the awards, based on a scale of from 48 to 50½c. per hr. for motormen and conductors in the large cities, 45c. per hr. in smaller cities and 42c. per hr. in rural communities.

An Important Statement

In the same announcement the War Labor Board gave out the following important statement concerning labor union controversies which may be expected to govern future difficulties of the same kind:

In cases where the right to organize has been an issue, the arbitrators applied the War Labor Board principles protecting workers in the exercise of their right to join trade unions without fear of molestation by the employer. Where individual employment contracts have been exacted by employing companies they are ordered eliminated for the period of the war on the ground that they constitute an interference with the free right of men to organize. Such an order was made in the case of the Omaha & Council Bluffs Street Railway Co. The administrators were called upon to render a decision with respect to the right of organized operatives to wear the button of their local union in the case of the Columbus Railway, Power & Light Co. This question has frequently become an issue between street railway companies and their employees. In the Columbus award, the arbitrators declared their inability to "see any objection under ordinary circumstances to the workers wearing a modest button of the ordinary size and design, worn presumably not for any objectional purpose, but as men wear Red Cross or fraternal buttons." In the same case, four men named as having been discharged for union activities were ordered reinstated in their former positions and ratings with full pay for lost time.

In its awards, the board recommends that the local authorities consider these increases in connection with demands by the companies for higher fares.

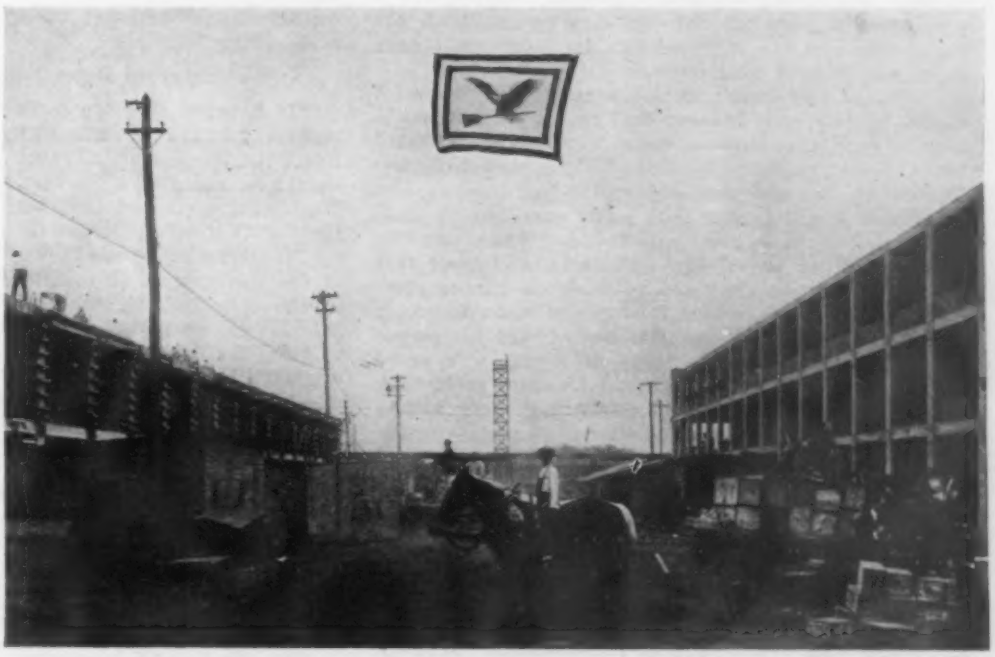
British Development of Brazilian Iron Ore

According to British press reports, the firm of Armstrong & Vickers has presented to the Brazilian Government important proposals for the exploitation of iron deposits, the manufacture of iron and steel products of all kinds, the erection of dry docks, and the development of related industries.

The eleventh annual picnic of the Cutler-Hammer Mfg. Co., Milwaukee, Wis., was held at Waukesha Beach, Pewaukee Lake, Wis., July 27, and was attended by a large number of employees and their families. All of the prizes at the athletic events consisted of various amounts of thrift stamps.

Reducing Labor Turnover in Construction Work

To develop the patriotic impulse and to emphasize that its employees are on what it calls the second line of defense, the Turner Construction Co., which has some 14,000 to 15,000 employees engaged in erecting Government buildings, has found it desirable to take some special measures. As the shipyard worker has been finding himself the subject of posters as an indispensable war worker, so it has been decided to employ artists and issue posters to identify construction men directly with the prosecution of the war. Much of the Government work which the company is pushing covers buildings of tremendous size. The various units of these can be proceeded with simultaneously. Owing to the necessity for erection with the greatest possible dispatch, an opportunity has been taken advantage of to bring about competition among groups engaged on different sections. An honor flag typifying work has been designed by Charles Livingston Bull, and this is flown on the section of work on which there has been the greatest progress. As the work is largely reinforced concrete, progress is measured in terms of the amount of forms erected per man engaged, the amount of reinforcing steel work put into position, and finally the per capita amount of concrete put in place, all per men engaged. The result has been that the honor flag has not remained over the same section continuously.



An Honor Flag Is Displayed at Each of the Government Construction Operations Undertaken by the Turner Construction Co., Partly to Indicate Which Group of Workmen Are Making Best Progress and Also to Instill in the Minds of the Workmen That They Are, After All, War Workers

This honor flag, reproduced in the accompanying illustration, contains an eagle in flight on a field of white carrying in its talons a broom, and the border is red, white and blue.

The company, like the Emergency Fleet Corporation, issues its own weekly journal. It has three large construction jobs, and the *Mixer*, as the paper is called, is issued one for each operation—with local news in each case. One of the large contracts covers the Navy and Army office building in Washington and there is a Washington *Mixer*. It has two for Brooklyn, where it is building the Navy supply base at Thirty-first Street and the Army supply base at Sixty-fifth Street. These contain information regarding the activities of the employees and of the company, including details of record performances in various lines. The new posters referred to are provided as an insert every few weeks, and it is found that even if the papers are not ready at time of paying off, the men wait around until the papers arrive.

Some idea of the size of the structures under construction may incidentally be mentioned. The storehouses in Brooklyn, comprising two adjacent structures of nine stories and basement in height, have a total floor area five times that of the Equitable Building, New York, the largest office structure in the world. The Navy and Army building in Washington, three stories in height, contains 17 parallel wings 60 ft. wide all running from a common head-house. All these wings placed end to end would make a building nearly two miles long, retaining the three stories of height.

Another feature of the effort to arouse interest in the workmen is an occasional celebration. For example: At the Brooklyn construction recently an Italian officer spoke in his native tongue to several thousand employees, who were so much aroused that a copy of the speech in Italian was printed as an insert in the succeeding number of the *Mixer*, and it has been found that the printed speech was so well received that it is preserved on the walls of the dwellings of many of the workers.

In short, the employees have been taught to understand they are on the "second line of defense"; they each receive the *Mixer;* addresses by those who have gone over the top are more or less frequent, and the labor turnover has been notably reduced.

Fixed Price Contracts Preferred

WASHINGTON, Aug. 6.—It has been decided by the Superior Board of Review of the General Staff that, wherever possible, fixed price contracts shall be used in the purchase of supplies for the War Department. In the exceptional cases, where it is clearly to the advantage of the Government that a cost plus contract be used, a cost plus fixed compensation contract is to be made, rather than a cost plus percentage contract.

The decision on all such contracts is not to be made by any individual. Hereafter, no cost plus contract will be made, unless it has first been approved by the particular supply bureau's board of review. Such boards have now been established in every bureau that has to do with the making of contracts of the procurement of supplies. These boards are composed of officers and civilians who have not taken any part in the preliminary arrangements of the proposed contract.

As a further check to insure absolute fairness to the Government, it has been decided that no cost plus contracts under the particular circumstances involved shall first have been approved by the Superior Board of Review. This board is composed of the Director of Purchases and Supplies, chairman; the Surveyor of Contracts and the chairmen of the chief procurement officers of the supply bureau's boards.

A school for the giving of instruction in arc welding has been opened at the plant of the Lincoln Electric Co., Cleveland, under the direction of the Emergency Fleet Corporation. The course of instruction which will be given under experienced men connected with the Lincoln company will be along practical lines with a view of training the men taking the course for arc welding in shipyards.

Strong Plea for Permanent Adjustment

Bridgeport Manufacturers Protest Against Abandoning Methods of Demonstrated Efficiency — Abstract of Brief Filed with National War Labor Board

The brief of the attorneys (George S. Hawley, Bridgeport, and Walter Gordon Merritt, New York) setting forth the manufacturers' side of the case in the Bridgeport, Conn., wage adjustment, was forwarded to the National War Labor Board last week. As it is believed that the award of the board will announce some fundamental principles that will govern in future awards, some of the paragraphs of this brief are of peculiar interest at this time. An abstract of certain illuminating portions of this document follows:

"If out of these misunderstandings and the hearings before the board there shall not come some stabilizing decision looking far beyond the present issues and to a permanent adjustment for the war period, then the arguments and the aims of the employers will have fallen far short of their purpose.

"Whatever is done with the present controversy, it should be definitely declared that no increase of wages will be granted except as called for by the increased cost of living as shown by cost of living statistics periodically adopted and published by the board.

"There is real danger that a few over-zealous leaders will imbue the workers with the idea that all strikes, whether just or unjust, are profitable. To meet this danger we petition the board to establish definite principles for future wage adjustments, and in no uncertain terms to declare that demands and strikes for wages which do not conform to these principles will prove fruitless and profitless. Unless this be done, groundless strikes may follow again and again in Bridgeport and other cities, and the idea that all strikes are profitable will become more deeply rooted. The time has arrived for firm and courageous action by this board.

Basic and Present Wages

"The wage adjustment must be simple, definite and adaptable, both for the present difficulty and for the remaining period of the war. The enunciation by the board of a definite principle whereby both parties may apply the award with almost mathematical accuracy and as automatically as possible, is a prime necessity. The workers themselves base their claim upon the increased cost of living, so we feel justified in considering an adjustment by that test. Our proposed principles to meet this test are as follows:

"(a) The present wage should be the wage of January, 1915, as the basic wage, plus a reasonable allowance for increased cost of living. When wages meet that test, they should remain undisturbed. The reasonableness of the 1915 wage should be presumed from its continued and prevailing observance, except in cases where it is shown to be manifestly unfair, particularly since the union at the hearing referred to them as 'the high wages of 1915.'

"(b) Whatever basic wage is now fixed should be declared to be the basic wage for the future without alteration except a fair adjustment at not oftener than six months periods, when increased cost of living as shown by publicly adopted figures of this board calls for adjustment. Such a principle would settle and fix matters which now lead to controversy and misunderstanding. With such a declaration from this board and with approved cost of living statistics available, the workers and the employers would be supplied with a 'yard-stick' for future adjustments which would prepare their minds in advance for the futility or desirability of subsequent applications to the board. Again let us remind the board of the importance of removing wages from the field of controversy by the adoption of some such method as this.

"Any allowance for cost of living should be kept separate, rather than being merged in the total wage, so that the worker will not come to regard it as a part of his normal wage. This is a plan already being followed by some manufacturers who use a so-called H.C.L. envelope for the extra allowance.

"The amount of the cost of living allowance according to Government awards varies with the different grades of workers. The reason for such a gradation, according to the Railroad Wage Commission, lies in the fact that the wages of the more highly paid workers are not applied solely to the cost of living. The principle has already received official recognition in the railroad wage award, the packing house award, and the bill passed by House and Senate relating to wages of Federal employees. The increased consumption of luxuries by the workers in Great Britain and in the United States furnishes indisputable evidence in support of this principle.

Shipyard Rates Not a Fair Test

"It is urged that the rates for machinists and toolmakers adopted by the Shipyard Labor Adjustment Board in its award covering labor in the shipyards should be accepted as a standard to be applied here. We believe the board and those who make this suggestion will see that it is not tenable for several reasons. . . . It has also been shown that it is the fixed policy of the Government to maintain a higher rate of wage in the shipyards than elsewhere in order to attract workers to this most essential war work.

"The fact that classification and standardization are workable in a new and comparatively simple industry does not demonstrate their practicability in the complex and varied industries in Bridgeport which have been built up around firmly established principles of an opposite character.

"A high minimum wage for each craft and a curtailment of the employer's freedom to classify and grade, would radically alter factory management contrary to the assurances of the War Department and the principles of this board; would prove impracticable, destroy efficiency, reduce production and stir up unrest.

Factory Management in Connecticut

"In passing upon these important issues, the underlying conceptions, practices, and systems of long standing, which are the very keystone of factory organization in Connecticut, cannot be ignored. Remove the keystone and the arch must needs be reconstructed from the bottom up. Will the board take the chance of demolishing and rebuilding this structure, with its inevitable postponement of overseas deliveries, when the present structure functions well?

"The fundamental conceptions of factory management in Connecticut are as follows:

"1. Complete control and management by employer.

"2. Rewarding each man according to his individual merit, and granting him advances and promotion as his work warrants.

"In piece-work this problem takes care of itself. With hourly rates the entire *esprit de corps* depends upon the employer's freedom and willingness to speedily and adequately adjust all rates in accord with work accomplished.

"3. Unrestricted freedom on the part of the employer to classify, assign, grade, and reward men without being bound by inaccurate occupational standards.

"There have been no standard hourly rates, and in the effort to secure exact justice and individual initiative, there are as many rates as there are variations in human ability among the men employed. Under this flexible system justice and contentment have been measurably secured by providing numerous grades of pay in each of the numerous occupations, so that the peculiar deserts of each individual are fairly well recognized. Thousands of rates have thus been brought into existence.

"4. The settlement of all grievances direct with employees or groups of employees without outside intervention.

"This is the regime which existed when the needs of the nation called upon these factories to serve their country, and the record shows that this regime has served well without substantial oppression or injustice to employees. Any adjustment of wages by this board should not unnecessarily disturb the fundamental principles of this regime."

Government Assurance to Connecticut Manufacturers

At this point in the brief occurs a lengthy recital of various interviews with officials of the War Department with excerpts from correspondence which has been offered as exhibits to the board. It appears from this statement that on Nov. 28, 1917, there was a conference at Hartford, Conn., between Connecticut manufacturers and Stanley King and Samuel J. Rosensohn, representing the Secretary of War. "These gentlemen made the position of the Government clear in fuller statements of the Government's policies, with reassurances of the agreement already stated, and presented a letter from the Secretary of War which was headed 'Statement of the Secretary of War to Munitions Manufacturers of Connecticut,' dated Nov. 21, 1917, which is an exhibit."

On Dec. 5, 1917, the Connecticut manufacturers passed a resolution, one section of which reads:

"Whereas the Secretary of War has recognized the principles upon which the manufacturers stand as reflected by a certain statement presented by the National Conference Board under date of Sept. 6, 1917; and through his representatives, Stanley King and Samuel J. Rosensohn; and through his letters of Nov. 21 and Dec. 3, 1917, has reassured the manufacturers that it is no part of the purpose of his office to interfere with the management or control of industries, but that on the contrary it is the express and avowed policy of his department to maintain pre-war standards . . .

"Between Dec. 5 and Dec. 10, 1917, Louis G. Kibbe, representing the manufacturers of Connecticut, had an interview with Stanley King and Samuel J. Rosensohn at Washington, in which further positive assurances were given that the Secretary of War would guarantee that 'existing methods of management and control would not be disturbed or modified in any particular.' At this interview Mr. Rosensohn drew up a memorandum which was to form the basis of a definite statement interpreting the labor disputes clause, which memorandum is an exhibit.

"It appears, therefore, that from the beginning the manufacturers have had the repeated assurances of the War Department that the existing control and management of the shops and prevailing standards would not be changed; and whatever may be said of the legal effect of these assurances, it is indisputable that they are morally binding on the Government and its various agencies, among which is to be numbered the National War Labor Board. Under these circumstances, we submit that this board cannot institute a minimum wage of any kind asked for by the unions, or establish some agency to usurp the employer's function of classifying and grading his employees without running counter to these pledges. The evidence shows no justification or need for such a change.

"Under these principles (the published principles of the board) can this board properly consider any minimum wage other than a living wage in these localities which have not known the minimum wage? To interject such an innovation would be to experiment with ideas of social reform which even in peace times are controversial, and would be contrary to both the letter and spirit of the principles which are the written constitution of this board. In matters of this kind the status quo ante should be preserved, and that is in fact the recognized standard to-day.

Impracticability of a Minimum Wage

"Bridgeport is a city of many varied and complex industries, each of which has its own particular method of wage administration based on elaborate occupational classifications and gradations of pay in each classification. The occupational titles are used in such varying applications by the different factories that they are confusing and inept for general application; and the underlying conception of grading pay according to individual merit in each individual factory, which requires flexibility and elasticity, necessarily conflicts with standardization. The forcible substitution of a high occupational minimum in place of the present system would create controversy and deprive the manufacturer of the necessary right of rewarding men according to individual merit.

"The underlying necessity of rewarding each individual according to his individual deserts and thereby harnessing the motive power of self-interest is predicated on traits of human character too fundamental to be diputed. It has Governmental recognition in official awards. The three recognized methods of applying this are: piece rates, bonuses, and a gradation of hourly rates to meet individual requirements. In this case the board has before it established hourly rates which, in most of the factories, are not standard rates but are rates fixed to mete out justice to each individual. Thousands of rates are thus in operation and the incentive of self-interest, which is the boon of piece-work, is thus infused into hourly rates. To destroy this system by establishing a minimum wage for each craft of the kind contended for by the unions would be to trifle with a structure of demonstrated utility in the hour of the country's greatest need, and to thwart the board's object of maintaining maximum production. It is not possible for the board to lay down any adaptable rule which could be interjected into the delicate and complicated organisms of the factories of Bridgeport and other Connecticut cities without feeling that it was experimenting with the life of the nation.

" . . . Only 45 out of a total of over 500 (toolmakers) received 80 cents an hour, so the union's so-called minimum could more properly be called a maximum, and its adoption would inevitably involve a general leveling process which would destroy all incentive for good work. Many workmen of low efficiency who now serve their country in their limited way at lower rates of pay might of necessity be discharged because they could not earn the wage so artificially inflated; the process of rehabilitation for maimed men would also be hampered.

" . . . It would be impracticable to give the wages of the higher paid men the same boost and thus maintain the same equitable differentials between workmen of different grades, since to do so would mean an increase of some 60 per cent in wages.

Impracticability of Classification

"The very attempt to apply definite nomenclature to the different trades would produce controversy, and yet this would be necessary if arbitrary rates were fixed for machinists, toolmakers, etc. In the railroad award any attempt to base wage increase on occupational classification was abandoned, and all classification was based on the rate of pay, which method the award refers to as 'manifestly one of simplicity when applied to straight schedules of hourly, daily and monthly pay.' The Railroad Wage Commission also said: 'The proposal that a new classification should be attempted is one which to say the least may not be attempted now. This, moreover, is not the time in the judgment of the commission to make experiments which might lessen output, etc.' This proposed railroad classification included many thousands of machinists, etc., in the railroad shops.

" . . . New contracts, new machines and new systems call for the most flexible system, and would upset, with possibility for future discord, any arbitrary classification which might now be fixed.

"Furthermore, with the increased standardization of the work there has grown up a specialization and subdivision of labor heretofore unknown, and necessity has forced the manufacturer to divide and simplify the work so that the unskilled can be quickly broken in. . . . This change, so characteristic of present development in the munitions factories, has been brought about

by the organizing genius of the manufacturer and has only been possible under a system which gave that manufacturer the fullest freedom in selecting, grading and rewarding his employees according to individual merit. Destroy this system and you will hobble the most effective force in the production of munitions—the organizing genius of the manufacturer. All other considerations pale into insignificance compared with the potential mischief of such a radical and gratuitous innovation.

" . . . There is no blot on the present system; it is serving the country efficiently by producing munitions in advance of contract requirements, and it is serving the workman fairly by voluntary increases of wages beyond the increase of the cost of living. What possible justification can be urged to scrap the old regime and experiment with a new.

"Any finding by the board which attempts classification or the adoption of a minimum wage for different crafts other than the living wage, which is not a craft matter, or which essentially changes factory management and control, would be contrary to the principles of the board, which recognizes existing conditions in the locality affected; would violate the assurances of the Secretary of War; upset existing management and systems of production; greatly retard production; remove incentive; detrimentally affect plans for individual reward for skill and merit, and conflict with the purpose for which the board was created, viz.: that 'the maximum production of all war industries shall be maintained, and methods of work and operation on the part of employers or workers which operate to delay or limit production, or which have a tendency to artificially increase the price thereof, shall be discouraged.'"

MAKING MODERN ARMOR

Workshop at Metropolitan Museum Busy—Prof. Henry M. Howe's Service

WASHINGTON, Aug. 6.—Armor for the American soldiers—helmets, shields and breast-plates—is being modeled in the workshop of the Metropolitan Museum of Art in New York, according to an official statement by the War Department. Comprising all that was best in the types of armor used in the days of the ancients, this armor, in some instances, is being wrought into shape on ancient anvils and by hammers that were actually used centuries ago, and in direct charge of the workshop is a French artisan whose skill has been known to collectors the world over, and whose forbears, for generations back, have kept alive the dying trade of the armorer.

This war in Europe, which has brought back into use many discarded weapons and practices of medieval warfare, has found use for armor as well. This is shown in the adoption of steel helmets by all the warring powers; in the use of heavy breast-plates by the Germans and lighter breast-plates, for attack, by the English; in the armored waistcoats used by the Italians; and in trench shields which all the armies are using.

Because of this, it has become desirable to review the entire study of ancient armor, to which for centuries some of the greatest artists and scientists gave their best efforts.

Fortunately for the Ordnance Department, one of the greatest collections of ancient armor in the world, accessible to study by the American armor designers, is in the Metropolitan Museum of Art in New York with its armorer's workshop. So far as is known it is unique. It was established for the purpose of cleaning, repairing, or, in rare cases, restoring pieces that were defective. To this end, the Museum has studied exhaustively the processes of making armor, and has collected from all parts of the world the tools of the ancient armorer's art. Included among these are about 90 kinds of anvils and "stakes," several hundred different types of hammers, curious shears, and instruments, the very knowledge of which has today almost disappeared—almost, because there still exist armorers who have inherited the skill of their ancestors. At least six of them are known to be working today. One is a French artist named Daniel Tachaux, who is now working under the supervision of Major Bashford Dean of the Ordnance Department, in the armor workshop of the Metropolitan Museum of Art. As an artist in hammer work, M. Tachaux, many students believe, is superior to all

Major Dean himself was brought into the service of the army in November, 1917. Owing to his lifelong study of the subject, he was commissioned as a major and sent abroad at once to report on the status of armor. He returned to the United States late in January and has kept the armor workshop of the Museum busy, weekdays and holidays, turning out models in accordance with the suggestions of General Pershing and the Ordnance Department. No less than 25 different types of armor defenses have been made in various factories in experimental lots, including in number from a few score to many thousand pieces, some of which have found favorable comment at American headquarters. These armor defenses include even arm and leg guards, the use of which was suggested by the study of hospital statistics in France and England. It appeared that more than 40 per cent of the hospital casualties suffered were leg wounds and no less than 33 per cent arm wounds.

In connection with this work every effort has been made to improve the character of metal used in the armor-making. A committee of the National Council of Defense, including the names of such armor experts as Alexander McMillan Welch, Edward Hubbard Litchfield, Ambrose Monnell, Dr. G. O. Brewster and Clarence H. Mackay, has dealt especially with the problem of personal armor. And some of the most eminent metallurgists of the country, including those on the committee, have devoted almost their entire time to the question. Among these is Prof. Henry M. Howe, of Columbia University, who has made an exhaustive study of helmet metal, aiming to give the American soldier better protection than the soldier of any other nation.

Laclede Shell Plant at St. Louis

Plans have been officially approved by the war department for the construction and equipment of a second shell factory at St. Louis, in addition to that already under way for the Scullin Steel Co., with Governmental co-operation. The two plants, as planned, will be among the largest of their kind in the country and will each employ about 8,000 persons. The second plant will be under the supervision of the Laclede Gas Light Co., C. L. Holman, president, which is already operating in aid of the Government in the production of toluol in its by-product gas and coke plant. The Laclede steel plant will be located on South Broadway not far from the by-product plant mentioned, while the Scullin plant will be at 6700 Manchester Avenue, alongside the present Scullin steel plant. It is planned that both plants, the latter having already been started, shall be in operation by Dec. 1, and they will have a capacity of about 300,000 shells each per month or 10,000 per day. About 40 per cent will be the 240 mm. shell and the remainder, 60 per cent, the 155 mm. shell. The large shells will be made at the Scullin plant, mostly, and the smaller size at the Laclede plant.

The Bates & Rogers Construction Co., New York and Chicago, has been awarded the general contract for building the $20,000,000 Government nitrate plant in Toledo, Ohio. The plant will consist of 20 or more separate buildings and in addition a cantonment will be erected. It is stated that from 10,000 to 12,000 men will be employed when the construction work is well under way.

HARVESTER SUIT ENDED

Dissolution Will Be Followed by Reuniting Separated Companies

WASHINGTON, Aug. 6.—After six years of litigation the International Harvester Co. is to be dissolved as "an unlawful combination" by consent of the company, which has agreed to withdraw its appeal from the adverse decision of the United States Circuit Court, pending in the Supreme Court since 1915. It is the first important anti-trust proceeding to be determined since the beginning of the war, and is practically a victory for the Government. Under the terms of the compromise made with the Government the company agrees to dispose of its harvesting machinery lines known under the trade names of "Osborn," "Champion" and "Milwaukee," together with all machinery and other equipment as well as its plants at Springfield, Ohio, and Auburn, N. Y., where the first two lines are manufactured. The company, however, is to have until one year after the conclusion of peace to carry out the terms of this agreement. After Dec. 31, 1919, the company is not to have more than one representative in any city or town. Should these provisions fail to restore competitive conditions in the harvester machinery industry, the Government reserves the right, at the expiration of 18 months after the end of the war, "to extend such further relief in the present case as may be necessary to that end." The International Harvester Co. was organized in 1902 with a capitalization of $120,000,000. The present disposition of the proceedings leaves only two important "anti-trust" cases on the docket of the United States Supreme Court—the case against the United States Steel Corporation and the so-called "anthracite coal trust case."

Will Form New Company

According to a statement given out at Chicago by Harvester company officials, it is proposed, following the dismissal of the appeal, immediately to reunite the International Harvester Co. of New Jersey and the International Harvester Corporation in a new corporation to be called the International Harvester Co.

The plan for reunion provides for an issue of capital stock equal to the sum of the stocks, preferred and common, of the two present companies, namely, $60,000,000 preferred and $80,000,000 common, the same as the capitalization of the International Harvester Co. before the decision in 1913. The preferred stocks will be exchanged share for share, the common will be exchanged one and one-third shares of the new company for each share of the International Harvester Co. of New Jersey and two-thirds of a share of the new company for each share of the International Harvester Corporation.

President McCormick's Statement

In a statement giving the reasons for the dismissal of the appeal from the decision of the Federal court, Cyrus H. McCormick, president of the International Harvester Co., says:

"The International Harvester Co., under the pressure of war conditions, has agreed to dismiss its appeal in the Government suit now pending in the Supreme Court of the United States.

"For business reasons, not affecting the suit, the assets of the company were equally divided in January, 1913, between the old company and a new company, the International Harvester Corporation, the latter taking over the foreign plants and business and the new lines, such as tractors, gas engines, wagons, cream separators, etc.

"The greater part of the assets of the new corporation was invested in the foreign business, very largely in Russia. The war has played havoc with the assets and business in Russia and the Central Empires. No dividend whatever has been paid on the $40,000,000 of common stock of the corporation during the four years of the war. The uncertainties arising out of the Government litigation while pending would necessarily prevent the old company from making any permanent plans for the development of its business, and in the event of an adverse decision it would be deprived of a large part of its present business without having established other fields for its activities.

"In view of the situation, it was decided to accept as final the decree of the lower court upon an agreement with the Government as to the further decree to be entered in that court. This further decree will restrict the sales agencies of the companies after Dec. 31, 1919, and increase the number of its competitors by requiring the sale of three of its five lines of harvesting machines. The result will be the loss by the company of a considerable part of its long-established trade in harvesting machines.

"It is perhaps needless to say that the officers and directors of the company have decided with extreme reluctance and regret to accept the terms of the adverse decree of the district court, the legality of which is at least doubtful, in view of the fact that the Government failed to secure its affirmance by the Supreme Court after two presentations of its case against the company.

"If the decree had been based upon alleged violations of the law by the company, instead of upon its alleged power to violate the law, we would hardly have felt warranted in dismissing our appeal, even for the sake of conserving the business situation. As it is, the decree of the district court is accepted as one of the hardships growing out of war."

Great Foreign Demand

An official of the Harvester company has been quoted as saying that the foreign and domestic demand for agricultural machinery is "simply colossal" at the present time, and that the proposed reorganization of the Harvester interests, through the consolidation of the International Harvester Co. of New Jersey and the International Harvester Corporation, would result in greatly increased efficiency in the general organization.

With this consolidation completed, it is expected that steps will be taken at once to rebuild the foreign organization so that full advantage may be taken of the markets abroad just as soon as peace comes.

Bonuses to Coal Miners Forbidden

WASHINGTON, Aug. 6.—The War Labor Board's ban on the payment of bonuses has been extended to the coal industry by Fuel Administrator Garfield. He has issued the following order:

Information is reaching me that coal operators are bidding against each other for labor by payment of bonuses. This inevitably causes unrest and shifts but does not increase the total production of coal. Maximum production is essential to the successful conduct of the war, and for the welfare of the boys in the trenches. The democracy we are seeking to establish at home and abroad demands that maximum production be based on an arrangement fair to all concerned—to all mineworkers, all operators and all the public.

The payment of bonuses in any form is contrary to the spirit of the wage agreements made by operators and mineworkers with the President of the United States last November. Those agreements covered the period of the war. With full confidence therefore that the Fuel Administration will have the support of all associations and individuals in curbing violations of that agreement, I hereby announce that if any operator hereafter undertakes to pay a bonus in any form in violation of the terms or spirit of the agreements above referred to, I shall assume that the mine price of coal allowed that operator is too high and I shall accordingly order reduction thereof. Also, I am directing investigation of alleged payments of bonuses now or since the November agreement, and shall make such further order and regulations as the facts may justify.

As this opens the possibility of labor troubles in the mines where the bonus system has been used, it is promised by representatives of the Fuel Administration that an effort will be made to find a solution which will avoid that danger. So far, however, only the text of Fuel Administrator Garfield's order has been given out.

Drastic Corporate Taxation Proposed

Ways and Means Committee, Working on New Revenue Bill, Reaches Some Tentative Agreements—Senate May Materially Amend House Bill

WASHINGTON, Aug. 6.—An indication of the drastic character of corporate taxation contemplated by the Ways and Means Committee is given in the action of Chairman Kitchin and his colleagues in fixing the so-called normal corporation tax in the tentative draft of the new revenue bill at 18 per cent of net incomes with a reduction to 12 per cent in the amounts set aside for distribution to stockholders, coupled with an excess profits tax ranging from 30 per cent to 80 per cent of all gains in excess of very moderate exemptions. The normal individual income tax has been raised in the new bill from 4 to 10 per cent, and a further levy on the earnings of corporations will be provided by a tax on so-called unearned incomes derived from investments in corporate and other securities. As a capstone to this pyramid, an influential contingent of the House committee is strenuously urging the adoption of a war profits tax as differentiated from the excess profits tax to be based on gains directly traceable to war business.

Trebling the Tax

The decision to raise the normal tax on corporate incomes to 18 per cent means a trebling on net earnings except such part as may be distributed to stockholders in the form of dividends, the tax on such portion being doubled. In adopting these differential rates of taxing net incomes of corporations the committee has displayed considerable ingenuity in solving the double problem of securing a large increase in revenue from corporate taxes while at the same time discouraging corporations from carrying large amounts to surplus for the purpose of avoiding the individual income tax that would apply to distributed profits. In the framing of the tax laws of 1916 and 1917, Congress resorted to various expedients to prevent the impounding of surplus and to encourage the distribution of earnings so as to render them taxable as income in the hands of shareholders. The method which the Ways and Means Committee is now adopting leaves so great a "spread" between the rates of tax on earnings carried to surplus and those distributed to stockholders that there will be a very strong incentive to pay maximum dividends, and a substantial penalty even on such earnings as may be added to surplus because the money is actually needed in the conduct of business.

This matter is of special interest to the iron, steel, and collateral industries, which during the past six months have been called upon to make very large extensions of manufacturing facilities, in many cases on a scale requiring Governmental assistance in financing the projects. It is a significant fact, but quite in line with the policies which appear to govern the present leaders of the Ways and Means Committee, that the conservative plan of financing extensions, so far as is possible, by carrying earnings to surplus, should be penalized at a time when the Federal Treasury is being called upon to advance large sums to extend private plants for the production of war material.

Excess Profits Tax

The excess profits tax as tentatively decided upon is graduated in three brackets and therefore bears most heavily upon the corporations securing the largest returns upon their invested capital. The first bracket assesses a rate of 30 per cent upon the net income in excess of $2,000 plus 10 per cent of the invested capital and not in excess of 20 per cent of the net income. The second bracket imposes a rate of 50 per cent on earnings in excess of 20 per cent of the net income and not in excess of 25 per cent, while the third bracket levies a flat tax of 80 per cent on all net income in excess of 25 per cent on the invested capital.

While the normal corporation tax will be trebled and the total revenues derived from this source increased to at least $1,000,000,000, the gain from the imposition of higher rates on excess profits will probably be disappointing to the tax gatherers. Even Mr. Kitchin concedes that the Government's price-fixing policy has eaten heavily into the possible earnings of many corporations in the leading industries, and that the total revenue to be derived under this title of the new bill will probably not exceed $1,700,000,000, an increase of but $300,000,000. This estimate also takes into account the steadily rising material and labor costs that have marked all industrial operations since the beginning of the current calendar year.

Assembling the estimates of the productive capacity of the normal corporate income and excess profits taxes and adding thereto the anticipated returns from personal incomes of $1,800,000,000 and an increase in the estate taxes of $100,000,000, the committee reaches a total of $4,600,000,000, leaving $3,400,000,000 to be obtained from other sources if the new tax measure is to produce the desired $8,000,000,000.

Political Considerations

To obtain this sum would not be a difficult matter if no political considerations were involved, but the terms of the new tax law will be well known throughout the country, even if the new measure is not on the statute books, when the voters go to the polls in November, and the Congressional leaders feel that they must therefore proceed with great caution. The present tariff may be counted upon for approximately $250,000,000 and the proposed doubling of the taxes on distilled spirits and tobacco could be depended upon for at least $500,000,000 but for the uncertainty concerning pending prohibition legislation, which may entirely wipe out the alcoholic beverage revenue. A long schedule of so-called luxuries very heavily taxed is estimated to produce a round billion dollars, and consumption taxes —which Congressional leaders, especially those of the House, would approach very gingerly—are figured as good for $250,000,000.

Amortization of Plants

Unless all these projects were adopted, however, there would still be a deficit on the basis of a total revenue of $8,000,000,000, and this fact is employed as a strong argument by those members of the Ways and Means Committee who propose to levy a war profits tax on corporations as distinguished from the excess profits tax already adopted. The advocates of this particular impost declare that the rate should be very high and should be equivalent to the taking over by the Government of 75 or 80 per cent of all gains in excess of an 8 or 10 per cent return on invested capital where such gains are directly due to the war. The opponents of this tax insist that corporations paying an excess profits tax on all gains in excess of $2,000 and 10 per cent on invested capital will make an adequate return upon their actual war profits and should be allowed a reasonable margin for the amortization of plants especially constructed for war work and therefore subject to very heavy depreciation when the war is over. The advocates of a special tax on war profits answer this argument with the suggestion that an alternative provision should be incorporated in the bill under the terms of which, in the case of corporations making their money out of the war, the first and second brackets of the excess profits tax should be ignored and the net income in excess of the exemption of $2,000 plus 10 per cent of the amount of invested capital subjected to the 80 per cent rate of the third bracket. This issue is likely

to be voted upon and reconsidered many times before the bill is finally reported to the House about Sept. 1.

Taxes on Automobiles

In connection with the so-called luxuries schedule the committee has adopted a tentative series of tax rates on automobiles which it is estimated will yield about $125,000,000. These taxes will apply both to producers and owners of cars. Manufacturers will pay 10 per cent on the sales price of pleasure automobiles and 5 per cent on trucks. Owners of cars will pay rates ranging from $10 to $140, based on original cost, in accordance with the following schedule.

Original Cost of Automobile	Tax
$500 or less	$10
Above $500 and not over $750	15
Above $750 and not over $1,000	20
Above $1,000 and not over $1,500	30
Above $1,500 and not over $2,000	40
Above $2,000 and not over $2,500	50
Above $2,500 and not over $3,000	60
Above $3,000 and not over $3,500	80
Above $3,500 and not over $4,000	100
Above $4,000 and not over $4,500	120
Above $4,500 and not over $5,000	140

An additional $40 for each $1,000 of original cost above $5,000.

A tax of $5 per annum has been adopted for motorcycles regardless of cost or power.

Gasoline has been tentatively taxed at 2 cents per gallon, a rate that is calculated to net $45,000,000. This tax is evoking strenuous protests from the farmers of the country, and it may be abandoned, as on two previous occasions when the rural sections rose up in opposition to similar levies. The farmer's vote next November is being eagerly sought by both political parties and it will take a brave Congressman to cast a ballot for a tax on gasoline superimposed upon a levy of $10 per annum on every farmer's automobile no matter how cheap the car.

In view of the heavy increases already made by the Railroad Administration in freight and passenger rates, the Ways and Means Committee has decided not to raise the 3 per cent tax on transportation by freight or the taxes on passenger fares and sleeping and chair car accommodations.

Senate Leaders Aroused

The announcement of the tentative action of the Way and Means Committee in making very heavy increases in the taxes on corporate and individual incomes has aroused the Senate leaders, and serves to emphasize the fact that the Finance Committee holds the veto power over all these projects. Members of the Finance Committee who are also members of the Senate Committee on Appropriations, notably Senator Smoot of Utah, one of the most experienced members of the upper house, are emphatic in the declaration that the revenue bill, as it finally becomes a law, will not be designed to raise $8,000,000,000 per annum, as recommended by the Treasury Department, but a considerably smaller sum. Senator Smoot asserts very positively that the Government will not need to raise $8,000,000,000 by taxation, and gives two sound reasons for his position; first, that it will not be wise to attempt to finance a full third of the cost of the war by taxation; and second, that the Government cannot expend $24,000,000,000 during the current fiscal year. Senator Smoot's opinion, which is shared by many others, is that Congress has appropriated very generously to take care of estimated expenses, and especially has authorized enormous appropriations for war material which cannot be manufactured before June 30 next. While it is conceded that there has been of late a speeding up in deliveries of material, and especially in merchant ship construction, nevertheless it is pointed out that some of the big projects for which several large sums have already been set aside will hardly be well under way before the end of the present fiscal year, and will not reach a quantity production basis for many months thereafter.

Cannot Spend All Provided

In this connection the Senate leaders point to a statement presented in the House a few days ago by Representative Sherley, chairman of the Appropriations Committee, as substantiating their own views with regard to the inability of the Government to spend the money already provided for war purposes. Reviewing the appropriations for the fiscal year ended June 30, 1918, Mr. Sherley shows that Congress authorized expenditures aggregating $18,900,000,000, of which amount there were actually expended, including loans to our allies, a little more than $13,500,000,000, leaving a balance of about $5,400,000,000 unexpended.

Mr. Sherley also submitted a statement showing authorized bond issues to date of $22,000,000,000, with actual bonds issued of but $9,978,000,000, in round figures, leaving remaining bonds authorized to be issued of $12,021,000,000. In addition there has been authorized an issue of $2,000,000,000 in War Saving Stamps, of which but $307,000,000, or about one-seventh the total authorized, have thus far been sold. Mr. Sherley also presents figures showing that the revenue under existing tax laws, including postal receipts, will approximate $4,450,000,000 during the current fiscal year, which would leave but $3,550,000,000 to be raised by additional taxation, even should Congress adopt the Treasury Department's recommendation for an aggregate revenue project of $8,000,000,000.

In view of Mr. Sherley's figures, and of the attitude of the Senate leaders referred to, corporation managers, in considering the tentative action of the Ways and Means Committee, will be justified in remembering that the Finance Committee will amend the House bill in many particulars, and will probably grant hearings to all interests before finally voting on this exceedingly important legislation. W. L. C.

Exporting to Holland and Denmark

WASHINGTON, Aug. 6.—Arrangements have been made by the War Trade Board with the Governments of Holland and Denmark for an important extension of the lists of commodities which may hereafter be exported to those countries. This is the result of six months of negotiation and the new list includes a long series of items previously excluded from export. Among the articles applications to export which the War Trade Board hereafter will consider are the following:

Adding and calculating machines; automobiles (passenger), bicycles, motorcycles, and spare parts of, but no tires and no accessories; cash registers; clocks, including clocks for time-checking; cutlery; knives (table, dessert, butchers, cooks, bread, carving, pocket, hunting, painters, palette, shoemaker's, pruning, budding and bowie); scissors; steel forks (table and carving); razors (including safety razors and blades not containing nickel or tin); electroplated goods and silverware containing not more than 5 per cent nickel or copper; gage glasses; hardware for builders if of iron or steel; machinery; cotton goods machinery, laundry (not containing rubber or copper), sugar refining machinery, spare or replacement parts, printing presses (not containing an undue proportion of copper, nickel or antimony), typesetting and type casting (excluding type metal); pen nibs; screw spanners for cycles; sewing machines; scales and balances not including weights of copper or brass; typewriters and spare parts and accessories (except typewriter ribbons not cut for use and except ribbons over two inches wide).

To encourage the prompt and regular attendance of employees, the American Multigraph Co., Cleveland, has adopted a lottery plan of prize giving. Under this plan, each employee who has a perfect attendance record by being at work every day and on time and putting in full time for a month will be given a numbered ticket. Six hundred of these tickets will be issued and if that many employees do not have a perfect attendance, the number will be filled out with those having the next best records. At the end of the month, a drawing will take place and the holder of the lucky number will win a Ford touring car.

The Lincoln Electric Co., Cleveland, has taken an order from the Ordnance Department for 53 150-amp. arc welding machines. These machines will be used in France in connection with portable machine shops carried on motor trucks.

CORRESPONDENCE

Appeal to Consumers of Oil and Gas Well Supplies

To the Editor: We wish to secure the co-operation of all users of oil well supplies and equipment in the conservation of same. To that end we hereby address an open letter to the managing heads of all oil and gas producing companies, soliciting their support and assistance in disseminating our propaganda throughout their respective organizations. We ask that every president of every oil and natural gas company address a circular letter to all the managers, superintendents and foremen in their employ, repeating and giving their personal indorsement to the following:

Don't worry about a possible shortage of supplies which may never materialize.

Don't scrap a boiler when a patch or new set of tubes will lengthen its life.

Don't accumulate and hold unsuitable sizes of tubular goods in local yards that can be utilized elsewhere.

Don't accumulate a stock of short lengths of wire rope or tubular goods when by splicing same can be made useful for present needs.

Don't buy new storage tanks when they can be transferred from another field.

Don't use *steel* tanks for any purpose where wood or concrete is available and will answer the purpose *fairly well.*

Don't use *steel* for roofing or siding purposes when wood, slate, tiling and prepared materials will answer the purpose *fairly well.*

Don't forget that every pound of steel produced can be utilized in the manufacture of shells for killing the Boches or in building ships to carry our boys to France and protect them with supplies after they get there.

Don't purchase and ask for shipment of supplies in excess of your ability to consume same within a reasonable time *after receipt*—in other words

Don't hoard; give the other fellow a chance.

Don't sell or purchase any supplies at higher than the established prices published by the leading oil well supply dealers, which prices are established by agreement between the War Industries Board and the American Iron & Steel Institute. In other words,

Don't profiteer or encourage others in doing so.

Oil Division, U. S. Fuel Administration,
Bureau of Oil Well Supplies,
GEORGE E. DAY, Director.

New York, July 27.

How Far Does a Belt Slip?

To the Editor: Not long ago I read the statement, "it is obvious that the chief wear on belts is occasioned by their swift curling and uncurling motion around the pulleys." If the belt is dry, the fibers within the belt rub against one another with greater friction, and consequently the wear will be greater for the same reason that an unlubricated bearing will wear more rapidly than will a lubricated one. But if the belt is properly treated with a preserving lubricant similar to the natural lubricant that is in the hide while on the animal, the internal wear is very small indeed. Experience with dry and treated belts bears out these statements.

While thinking this over I thought it might be interesting to calculate what is the total slip or creep of a belt for say a year. A 4-ft. pulley, as an example, may rotate at the rate of 250 r.p.m. Its belt does not slip, but the creep is 2 per cent. It is used 10 hr. per day during 300 workdays in the year. The linear travel of the pulley rim is 3141.6 ft. per min. A 2 per cent creep (sometimes erroneously termed "slip") means about .63 ft. per min. This is equal to 3780 ft. per hr., 37,800 ft. per 10-hr. day, or 11,300,000 ft. per year of 300 working days, a total of 2140 miles.

Does it seem strange that belts wear out? Isn't it remarkable that belts last as long as they do? And isn't it plain that pulleys should preferably be smooth in order that the wear may be reduced to the minimum? And if there is any slip on the pulley in addition to the creep the matter is all the more serious. It must be remembered, however, that a given point on the contact side of a belt is not in contact with the pulleys all the time.

New York. W. F. SCHAPHORST.

Will Inspect Steel Fabricating Shops

The steel distribution committee of the American Iron and Steel Institute has assigned to the Lackawanna Steel Co. the task of conducting bi-weekly inspections of steel fabricating shops which are doing work for the American International Shipbuilding Corporation and the Submarine Boat Corporation. District managers of the Lackawanna Steel Co. will visit all of the shops in their districts once every two weeks and report to the steel distribution committee on conditions which affect the progress of fabricating steel for ships. If there are shortages of steel at any shops, or an oversupply, or if labor conditions, lack of equipment, or any other causes, interfere with rapid progress of the work, such factors will be reported upon.

This work will supplement the country-wide inspection of steel supply at shipyards which is being done by men in the employ of the Carnegie Steel Co., the Illinois Steel Co., and the Tennessee Coal, Iron & Railroad Co. This was undertaken by these companies at the request of the steel distribution committee, and has worked very satisfactorily in facilitating a steady supply of steel for ships.

An investigation of the progress of shell-forging work is also being undertaken. All of the plants at work on shell forgings will be visited within the next two weeks and a report on the supply of forgings at each plant will be sent to the steel distribution committee.

Profiteering Defined

A decision on profiteering which may serve as an important precedent for Government price fixing was announced Tuesday by the office of the Farm Equipment Control, Department of Agriculture. It declares persons who have sold equipment at replacement values when costs were high must continue to do so if prices go down, even though such sales bring less than the original cost price of the stock. Moreover, those whose selling price is fixed in relation to high replacement prices must restock immediately and carry the same quantity of equipment throughout the high price period as they had at its beginning in order not to profiteer. Those who desire to sell out without replacing their stock should not sell at a prevailing high price, but at cost plus the fair, usual profit. It will be considered hoarding if a manufacturer or dealer holds contracts for or arranges for more equipment than the reasonable demands of his business require.

Heavy Coal and Coke Movement

UNIONTOWN, PA., Aug. 4.—Movements of coal and coke down the Monongahela for the month of July were the greatest in history. The monthly report for Lock No. 4, located at Charleroi, above which are located virtually all the mines along the river, shows shipment of 26,924,000 bushels of coal and 2,848,000 bushels of coke. The great increase in the coal shipment was due principally to the opening of the Clairton by-product plant, but the coke shipments show conclusively that the river is rapidly coming into its own as a traffic route.

Orders have been placed for two of the steel frame buildings of the Birmingham Steel Corporation, Birmingham, Ala., which will build a steel fabricating plant in that city to furnish shapes for shipbuilding plants at Mobile.

GRAF GAS CONSUMING FURNACE

Air Introduced Above Bridge Wall Burns Gases Ordinarily Wasted in Boilers

BY JOHN NELSON

The Graf gas consuming furnace is designed to secure the combustion of the gases which ordinarily are wasted in the operation of power boilers and pass off in the form of smoke. It is the invention of Anton Graf, Worcester, Mass., and has been in practical operation on a battery of Stewart boilers, developing upward of 1700 hp., in the power plant of the Worcester Brewing Co., of which Mr. Graf is the chief engineer. The plant records indicate a reduced fuel consumption of about 25 per cent, using bituminous coal.

The principle of the appliance is based on the introduction, at the top of the bridge wall of the furnace, of preheated air impelled at high velocity by a steam jet. This results in a complete intermixture of the air and flue gases at a point of highest temperature, the result being a series of reactions in which escaping carbon monoxide and free carbon, together with the hydrocarbons, are converted into carbon dioxide, which means the translation of flue gases into heat.

Tests made by engineers of the Worcester Polytechnic Institute demonstrated a complete absence of carbon monoxide in the flues, as well as a minimum of free carbon, which means, in addition to greater fuel efficiency, a reduction of smoke to a very low point. The observation doors reveal a condition of apparently full incandescence in the combustion chamber, even immediately after stoking.

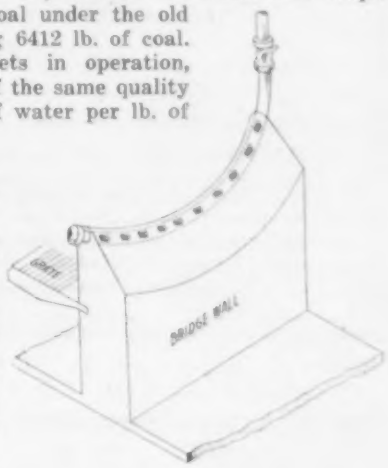
The structural changes in the boiler incident to the installation of the appliance are not great and require little time. The ordinary bridge wall form is discarded and instead of the straight horizontal top the wall is curved as an inverted arch, the arc corresponding to that of the boiler shell. Apart from the primary purpose of this new form it is claimed that a more uniform flow of gases from the firebox along the circumference is obtained as compared to where the height of the intervening space is greater at the ends of the bridge wall than at its center. Another change, which, however, has not directly to do with the appliance under discussion, is to place the flue opening at the rear of the combustion chamber at the bottom instead of at the top, the masonry above the opening serving as a baffle wall, thus keeping the heat low in the chamber where its usefulness is the greater.

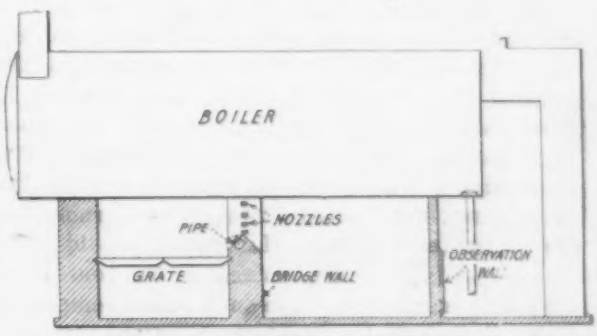
The air is introduced into the furnace through a 4-in. pipe, which is brought down through the masonry of the sidewall, and is curved to conform with the arch of the bridge wall, in which it is imbedded. In fact, all of the pipe within the boiler setting is protected by the masonry. The actual entrance of the air into the chamber is through a series of nozzles. It will be noticed that the lower interior wall of the nozzle is given an even gentle curve which serves to facilitate and guide the flow of air. The nozzles are so spaced that their jets combine at a point about 6 in. above the bridge wall, to form a solid stream of air covering the complete width of the furnace. The nozzles are set at an angle of 70 deg. in the direction in which the gases flow.

The steam pipe connects directly with the boiler, thus receiving full boiler pressure, and is introduced in the air pipe at a point slightly above the bend. The steam is admitted through a nozzle 1/16 in. in diameter. The vacuum created by the steam sucks in an amount of air which is large in proportion to the volume of steam used.

The steam serves the double purpose of preheating the air and of giving it a velocity sufficient to produce a complete intermixture with the flue gases. As the chemical reaction of converting carbon monoxide and oxygen into carbon dioxide is greatly facilitated by heat a smaller amount of preheated air will suffice to secure complete combustion, as compared to the volume of air which would be required were it to be admitted cold. The heat absorbed by the air and that represented in the steam taken from the boiler are believed to be converted back into energy in the combustion processes.

The boiler plant in which the Graf appliance has been tried out consists of 7-ft. horizontal boilers, operating at 125-lb. pressure. In evaporation tests using 13,000 B.t.u. soft coal, 7.38 lb. of water was evaporated per lb. of coal under the old conditions, burning 6412 lb. of coal. With the Graf jets in operation, burning 6300 lb. of the same quality of coal, 9.50 lb. of water per lb. of coal was the result. In 7-hr. tests for horsepower, running all boilers, the increase using the Graf system was from 1392 to 1760 hp. Worked out as an economy the plant was enabled to shut down one boiler, and the average difference resulting in fuel consumption was a reduction from 17 to 12 tons per day.





Air Is Introduced Through a Series of Special Nozzles at the Top of the Bridge Wall to Consume the Gases Ordinarily Wasted in a Power Boiler.

The new appliance was not designed as a smoke consumer, as the term is ordinarily applied. With this latter class of devices the primary purpose is to get rid of a smoke nuisance. The introduction of steam is generally an important factor and the amount employed may not tend to economy. The effort is not to save fuel cost, but to eliminate smoke. In the Graf appliance steam serves only as a propelling force, although possibly the presence of a slight amount of water may play a small part in securing improved combustion. But it is the air that counts. Too little air must give imperfect results. Too much air requires an expensive amount of heat from the furnace fire. The Polytechnic's tests established a correct ratio between steam and air, at which a maximum of carbon dioxide is present in the flue, and this is the proof of efficient combustion.

New Electric Smelting Furnaces in Sweden

Having doubled its capital and made it $724,000, the Aktiebolaget Porjus Smältverks proposes to build two electric smelting furnaces this summer, says United States Consul General Albert Halstead of Stockholm, Sweden. The company has already three furnaces in operation. The company's power is secured from the Porjus waterfall. It expects to manufacture 20,000 metric tons of pig iron each year.

The Birmingham Steel Co. has been incorporated in the state of Delaware by Henry Leon Brittain and associates, New York, and will build a steel fabricating plant in Birmingham, Ala., which they expect to have operating and furnishing fabricated steel for Mobile shipbuilding yards owned by them, in five months. The capital stock is $1,000,000.

ESTABLISHED 1855

THE IRON AGE

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The Harvester Dissolution

The settlement of the Government dissolution suit against the International Harvester Co. has raised the question whether the consent of the company to a dissolution order points the way in other suits, particularly that against the Steel Corporation. The cases differ materially. The International Harvester Co. lost its suit in the lower court; the United States Steel Corporation won. The International Harvester Co. did from 80 to 85 per cent of the business of the country in harvesting machinery. The constituent companies of the United States Steel Corporation produced 66.3 per cent of the country's output of steel ingots and castings in 1901, the year it came into existence, and their percentage steadily decreased until it was 48.8 in 1916. Their percentage of the finished rolled steel of the country in 1916 was 44.36.

The possession of power to act in contravention of the Sherman law was the main ground on which the decision adverse to the Harvester company was based. The court conceded that its power might not have been abused, but the fact that it had power so near approaching monopoly was held to bring it under the prohibitions of the Sherman law. The ground on which the court found for the Steel Corporation was mainly that the consolidation of companies in a variety of lines was necessary to the prosecution of a successful export trade in American steel products, as against the syndication and pooling methods which had so far advanced the export trade of Germany and that were not under the ban of the law in Great Britain. The war and the great campaigns for foreign trade which must follow it have not weakened this argument in behalf of the Steel Corporation. Nor has its position in the Government's suit been hurt but rather helped by the way its power to do things on an unexampled scale has been put at the disposal of the Government. Those who have been in a position to know, including the Steel Corporation's chief competitors, have freely testified to the help it has given, and the great scale on which it has helped, in forwarding the war plans of the Government and its Allies.

To be sure, testimony in the Steel Corporation's suit has long since been closed and nothing in its record of war service can affect the issue as made up for the Supreme Court. But if conditions produced by the war brought the International Harvester Co. to consent to a dissolution order, it is conceivable that the Department of Justice, once defeated in its attempt to disrupt the corporation, might find in the latter's war record no small reinforcement of the general approval given to the decision in the Circuit Court. Measured by the verdict of the press of the country, that was the most popular trust decision in all the annals of Sherman law cases.

Federal Control of Shop Wages

Why should an operator on a drill press which is equipped with a tool to perform a facing job be classed as a machinist while an operator of a drill press which is equipped with a drill is classed as a machinist's helper? Or by what process of thought does one arrive at a conclusion that cupola tenders and coremakers should be classed as molders? What a compendium of mechanical knowledge must be that man who can decide whether a welding job is "on work generally recognized as machinists' work" or "on work generally recognized as blacksmiths' work!"

Many instances like the above can be found in the official announcement of the new wage scale for the mechanical departments of the railroads, published elsewhere in this issue of THE IRON AGE. But even these cited are not so startling or so far-reaching as the determination that rates are to be based solely upon years of experience, with little regard for the real ability or the output of the workmen or the relative skill and adaptability required to operate various kinds of machine tools. It is true that the award recognizes that there are men of exceptional skill who should have the differential rates that they have previously enjoyed. As a whole, however, the award establishes high general minimums for all the participating classes of workers in all parts of the country. Contrast with this the statement recently issued by the National War Labor Board that it has decided that the board "should reserve any general rule of decision until its judgments have been sufficiently numerous and their opera-

tions sufficiently clear to make generalization safe."

Manufacturers clearly recognize that the actions of various Governmental agencies on the wage question in the industries, particularly in awards affecting the complexities of the metal working trades, threaten to impair the whole economic structure of this country—an impairment that will vitally affect our industries in the post-war period. The shipyard rates have already furnished a strong stimulus to wage profiteering on the part of organized workers and the high rates of the shipyards have already been awarded to workers for one private industry, the Worthington Pump & Machinery Corporation's plants at Cambridge and Buffalo, with a very distinct effect upon machinists in a large section of the country. The railroad award opens the door to widespread agitation on the part of munitions workers for a high minimum wage because it affords to a great group of metal workers minimums far in excess of the prevailing rates in some of the most important munitions plants in the country.

As this is written, a committee of prominent industrial managers is in Washington representing the manufacturers of Connecticut, to present to the National War Labor Policies Board a brief which recites the troubles that will follow any attempt to take out of the jurisdiction of the employers the classification of the workers in the metal trades, and the dangers that will ensue if an attempt is made to establish standard or high minimum wages that will mean the leveling out of wage differentials or the abolishment of an incentive basis for wage payments.

The basic assumption of the railroad machinists' award seems to be that there are few, if any, grades in the machinists' craft. Judging by the rates of pay awarded, it is assumed that the average machinist in the railroad shop is of equal skill to the machinist in the machine tool works or the tool shops of the munitions plants. This is distinctly not true. Broadly, it can be said that the machinist in the railroad shops works with calipers while the machinist in the other shops mentioned works with micrometers. There is little work in a railroad shop that calls for limits of one-thousandth of an inch or less, very common limits in the shops doing a higher grade of work. In other words, the degree of skill required in the railroad shops is much less than is required of the workman in other shops. It requires little imagination to visualize what would happen to our munitions plants and machine tool factories in the destruction of present management methods—and the consequent demoralization of production standards—if existing classifications and wage differentials are to be swept aside. Unless the Government is prepared to adjust thousands of existing contracts and sub-contracts promptly—with a huge increase in the cost of all war materials—it will approach future wage adjustments with a spirit of caution and with an investigation of all the facts and the probable results. Such care and investigation certainly are not indicated by most of the awards that have been made. Apart from the vast increase in war costs is the danger of small employers being forced out of business and of many large employers suffering heavy loss.

Written and Unwritten Laws

Two very important documents relating to economic problems connected with the war were published last week. One was a petition, just unearthed, presented to the German Government in December, 1917, by German manufacturers, urging it to take from France rich iron ore deposits in that part of Lorraine which the Germans failed to take after the Franco-Prussian war in 1871. The petition set forth the advantages which would result to Germany's industry from the annexation of French Lorraine and, above all, in insuring the success of the next war. It declared that in a future war the home supplies of iron ore "must take on a particularly powerful form, because the greater the iron wealth of an industrial state the more that state will be feared as an adversary."

The other document was the speech of Premier Lloyd George before the National Union of Manufacturers in London, in which he said that the longer the war lasts the sterner must be the economic terms imposed on the foe, declaring also that it is vitally important that the policy of America and Great Britain should be in complete agreement on economic as well as other problems.

There was, of course, no direct connection between the speech and the petition, but the publication of the petition at the same time as the speech contributes new and deeply impressive evidence of the importance of singleness of purpose without injecting any questions upon which the Allies may not be able to agree.

The first great duty of the Allies is to make it absolutely impossible for the Germans to hope to possess any territory that they did not possess before the war started, or even to retain the possession of the lands in Alsace-Lorraine wrongfully taken from the French in 1871. After the German autocracy is crushed, economic questions will receive full consideration. While President Wilson has declared his opposition to "selfish and exclusive economic leagues," and has advocated "the removal as far as possible of economic barriers and the establishment of equality of trade conditions among all the nations consenting to peace and associating themselves for its maintenance," it is not possible for the president of a republic to decide what the economic policy of the country will be. The people must do that. President Wilson's own party has not formulated its ideas as to post-bellum tariff policy and it is very probable that when it does there will be strong opposition, and that the country's policy will not be written into law until after another Presidential election. Lloyd George does not seem fully to appreciate this fact.

The unwritten law is, however, often more binding and enduring than the written. The deep feeling of loyalty and devotion that is being planted in the hearts of the Allies along with

the hatred of the horrible crimes of the Germans will last and surely will influence the currents of commerce. Buying and selling are not inhuman, and for a thousand years the nations which fought the Huns in the Great War should be happy to serve each other and shun the old enemies.

Steel Corporation Earnings

Some computations are necessary before comparison can be made of the Steel Corporation's profits and earnings in the past six quarters. The statement for the first quarter of this year showed earnings after deduction of taxes according to the law of 1917, while the statement for the second quarter, made public last week, showed earnings after deducting (1) an allowance for the quarter's taxes according to the law of 1917 and (2) the amount of $32,000,000 representing, for the two quarters combined, an estimate of the difference between taxes under the law of 1917 and the prospective law of 1918. The earnings actually reported for the two quarters—$56,961,424 for the first quarter and $62,557,391 for the second quarter—are, of course, not comparable at all. Prorating the $32,000,000 estimated for the half year to the two quarters in proportion to the total profits of the two quarters, the earnings of the first quarter become about $45,000,000 and the earnings of the second quarter about $74,000,000.

This figure, $74,000,000 for the second quarter, is comparable with the $295,292,180 reported as the earnings for the calendar year 1917. In each case the figures represent earnings after payment of subsidiary company bond interest, but before allowance for subsidiary company bond sinking funds, interest and sinking funds for Steel Corporation bonds, or depreciation and exhaustion charges. According to the corporation's estimates the prospective tax law would impose upon it taxes 35 per cent greater than would be imposed by the 1917 law. The $74,000,000 for the second quarter represents precisely the rate of earnings for 1917, so that conditions in other respects so improved with the corporation that it is able to bear taxes 35 per cent greater and yet have the same amount of money left. The half year, of course, shows up poorly in a comparison with 1917, but the first quarter's experience was, it is generally hoped, an altogether exceptional one, not likely to be repeated.

The profits in the two quarters of this year are readily computed by adding to the earnings reported the deductions stated to have been made on account of the war income tax of 4 per cent and the excess profits tax, on a graduated scale of percentages. These profits were $88,546,622 in the first quarter and $153,273,641 in the second quarter.

The statement of Federal taxes paid in 1917 given in the 1917 report, $233,465,435, includes the corporation income tax, which has been a feature since 1913, first at 1 per cent and beginning with 1916 at 2 per cent. To arrive at quarterly profits in 1917, comparable with the quarterly profits for this year, it is necessary to make a deduction for estimated corporation income tax and then allot the remainder, say $225,000,000, to the respective quarters, an allotment in proportion to the reported earnings appearing to represent a fair method. By such a method of procedure the quarterly profits in 1917 are found to be approximately as follows: First quarter, $135,000,000; second quarter, $155,000,000; third quarter, $125,000,000; fourth quarter, $105,000,000; total, $520,000,000. With these figures the profits for this year, $88,546,622 in the first and $153,273,641 in the second quarter, are strictly comparable. All the figures represent what was accomplished by the manufacturing and other operations. The variations are due to differences in rate of operation, in prices received and in manufacturing costs.

The quarter just ended proves to have been substantially as good, from a business standpoint, as the best quarter on record, the second quarter of 1917. From the shareholder's standpoint it is not as good, merely because the Government is going to tax this year's profits more heavily.

Comparing the second quarter of 1917 and the second quarter of this year, there was no difference to speak of in the quantity of material shipped. There was undoubtedly a very considerable increase in the cost of production. There must, therefore, have been quite a substantial increase in the prices realized. These prices, in the past quarter, were probably not materially above the Government limits, for at no time had the corporation's selling prices been much above the limits afterward set by the Government, and in two important commodities, pipe and wire, they had been lower. The average invoice prices in the second quarter of 1917, the record quarter for profits and earnings, were therefore below the present set prices. The increase in production cost meanwhile has fully made up the difference.

Heat-Treated Electric Cast Steel

A recent development in the metallurgy of electric cast steel may have an important bearing on the future of this industry. It is the successful manufacture of a special steel which has been used in a new type of chain called electric steel anchor chain, and also in draw-bar or coupler knuckles. When heat-treated this steel in these forms has unusual properties, particularly a high elastic limit and also superior fatigue-resisting powers.

Because of the great and sudden expansion in our shipbuilding program, it was found that the country's capacity in wrought iron chain was only 33 per cent of that needed. Steel foundrymen have solved the problem from both a foundry and metallurgical standpoint. The first public presentation of this subject was made at the meeting of the American Society for Testing Materials at Atlantic City in June and the details were published in THE IRON AGE, July 4. Tests of the chain prove it to be fully equal to and in many respects better than wrought-iron chain. But a short time ago it would not have been thought possible to cast a steel chain equal even to the old wrought-iron chain, so laboriously made.

The selection of a material for such chain was due largely to the experience of one prominent company which has been making cast-steel heat-treated draw-bar knuckles which have met with unusual success. The statement is made that of over one million of such knuckles in use not one has failed in service. The stress and shock to which such material is subjected are unusually severe.

The steel used in both the chain and the knuckles is an easy and inexpensive one to make and is an unusually simple alloy steel. Its composition is not generally divulged. The significant fact is the more extended application of heat treatment to steel castings. Another phase of this subject was referred to editorially in THE IRON AGE, May 30, 1918, in discussing the substitution of heat-treated alloy steel castings for forgings. The later development here referred to is but another example of the same tendency. In general, steel castings are only annealed, but the possible results of heat treatment, especially of alloy castings of all kinds, are of more significance than has been commonly supposed.

July Shop Launchings Break Record

WASHINGTON, Aug. 6.—Statistics given out today by the United States Shipping Board, from reports sent in by the various shipyards, show that more ships were launched during July than had hitherto been launched in any 12 months from American shipyards. The figures reach a total of 123 vessels having a deadweight tonnage of 631,944. Forty-one vessels were completed in July, totaling 235,025 deadweight tons. Of this number 36 were steel vessels of 217,025 deadweight tons, and five were wood vessels of 18,000 deadweight tons. This does not include two steel vessels of 15,855 deadweight tons which were delivered from Japanese shipyards. If these were added, the grand total of ships completed for the Shipping Board in July would be 43 ships of 250,880 deadweight tons.

During the last four working days of July, six contract and six requisition steamships of an aggregate deadweight tonnage of 66,130 were launched. During the same period four wood ships aggregating 14,000 deadweight tons went overboard, a total of 80,130 deadweight tons.

From August, 1917, when the present Shipping Board began operations, up to Aug. 1 of this year, there have been completed and delivered 37 steel contract vessels having a deadweight tonnage of 245,700, and 210 requisitioned vessels totaling 1,326,156 deadweight tons, a grand total of 247 ships aggregating 1,571,856 tons completed and placed in service. Almost half of this total tonnage was delivered during the last three months, the actual amount being 775,545 tons.

August is keeping up the July record. The launching of the steel cargo steamer *Invincible* at the Alameda, Cal., yards on Sunday broke all shipbuilding records. The *Invincible* has a deadweight tonnage of 12,000 tons and was launched just 24 days after her keel was laid. She is to be under steam within 35 days. Yesterday President Wilson attended the launching of the *Quistconck*, the first steamer to be launched at the Hog Island yards, which with its 150 ways is the largest shipyard in the world. It has 170 steel ships under contract with the Government. The *Quistconck* is a 7500-ton ship. Chairman Edward N. Hurley and Director-General Schwab also attended the ceremonies. All four Eastern fabricating yards—Hog Island, Bristol, Pa., Newark, N. J., and Wilmington, N. C., are now producing ships, according to the announcement of Chairman Hurley.

CONTENTS

Regular Buyers Not Getting Pig Iron

Of the difficulties contract buyers of pig iron are having in getting the iron they have bought, the Matthew Addy Co., Cincinnati, writes as follows in its review of the pig iron market:

We have before us a letter from one of our representatives whom we sent out to study furnace conditions in southern Ohio. He reports that one small furnace, which was sold up for the balance of this year, had just received in one mail allocations amounting to 10,000 tons; at the same time another small furnace in the same district that was sold up had received an allocation of 6000 tons; still another furnace in the same city, which is now many thousands of tons behindhand on its shipments, reports that allocations are being received at the rate of 3000 tons per week. The same company had just received a wire from Washington instructing it to discontinue for a time shipments on all of its basic orders and send all the basic iron made within a certain period into another direction. This same thing obtains in a much larger way in other districts where the pig iron tonnage is greater. What the outcome of all this will be no one can tell, but it is certain that many people who counted on getting a certain tonnage of iron this year will not get it.

JULY IRON OUTPUT LARGE

Daily Rate of 110,354 Gross Tons

A Net Gain of Eight Furnaces, Including Another 500-Ton Lackawanna Stack

The output of blast furnaces in July was 3,420,988 gross tons as compared with 3,323,791 tons in June. Production was accordingly at the rate of 110,354 tons daily for July, a 31-day month, as against 110,793 tons daily in June, a 30-day month, or a decrease of 439 tons a day. Although the pig iron produced in the seven months of this year, amounting to 21,423,660 gross tons, is less than 22,412,330 tons and 22,634,966 tons for the corresponding periods of 1917 and 1916, the daily rate of 110,354 tons exceeds the rates for July, 1917 and 1916, by 2534 tons and 6337 tons, respectively. A total of 51,762 gross tons of ferroalloys was produced, of which 29,996 tons were ferromanganese. Nineteen stacks were blown in and 11 blown out, a net gain of 8 furnaces.

Output by Districts

The accompanying table gives the production of all coke and anthracite furnaces in July and the three months preceding:

Monthly Pig-Iron Production—Gross Tons

	April (30days)	May (31days)	June (30days)	July (31days)
New York	214,179	237,044	222,908	229,424
New Jersey	22,518	24,339	26,990	25,588
Lehigh Valley	111,312	115,069	99,231	112,305
Schuylkill Valley	89,059	91,751	95,572	98,197
Lower Susquehanna and Lebanon Valleys	66,730	76,316	75,023	84,489
Pittsburgh district	665,665	695,794	686,658	707,023
Shenango Valley	168,056	177,911	166,036	161,548
Western Pennsylvania	203,344	199,604	190,596	200,511
Maryland, Virginia and Kentucky	93,561	96,472	90,769	98,334
Wheeling district	123,211	134,234	133,220	138,736
Mahoning Valley	306,317	330,627	296,585	293,627
Central and Northern Ohio	266,476	286,568	287,264	283,402
Southern Ohio	65,522	67,853	68,062	64,342
Chicago district	530,310	543,409	536,788	577,230
Mich., Minn., Mo., Wis., Col. and Wash.	119,663	125,437	114,566	113,487
Alabama	208,820	210,671	203,292	201,867
Tennessee and Ga.	33,468	33,413	30,231	30,878
Total	3,288,211	3,446,412	3,323,791	3,420,988

Daily Rate of Production

The daily rate of production of coke and anthracite pig iron by months, from July, 1917, is as follows:

Daily Rate of Pig-Iron Production by Months—Gross Tons

	Steel Works	Merchant	Total
July, 1917	76,440	31,380	107,820
August	71,436	33,336	104,772
September	73 290	31 175	104 465
October	76,664	29,886	106,550
November	77,135	29,724	106 859
December	66,605	26 392	92 997
January, 1918	55,662	22,137	77,799
February	56,938	25,897	82 835
March	74,526	29 122	103 648
April	79 199	30,408	109 607
May	81,238	29 937	111 175
June	81,734	29,059	110 793
July	79,248	31,106	110,354

Production of Steel Companies

Returns from all furnaces of the United States Steel Corporation and the various independent steel companies show the following totals of steel-making iron month by month, together with ferromanganese and spiegeleisen. These last, while stated separately, are also included in the columns of "total production."

Production of Steel Companies—Gross Tons

	Pig, total production			Spiegeleisen and ferromanganese		
	1916	1917	1918	1916	1917	1918
Jan.	2,251,035	2,244,203	1 756 208	24,866	38.792	30,695
Feb.	2,183,845	1,829,846	1,620,254	23,877	32,137	26,114
Mar.	2,365.116	2,285,430	2,349,419	29,388	36,563	39,122
Apr.	2,316,768	2,370,937	2,411,488	31,862	39,595	35,511
May	2,408,890	2,404,380	2 513 577	35,844	37,701	54,633
June	2,295,784	2,304,155	2,407,166	38,597	30,829	44,844
July	2,306,303	2,369,630	2,456,693	31,353	43,884	51,762
Aug.	2,313,122	2,214,513	.....	33,338	39,492	.....
Sept.	2,309,710	2,198,705	.....	29,451	42,235	.....
Oct.	2,530,806	2 376 589	.....	34,566	48,691	.....
Nov.	2,404,210	2,349,545	.....	44,975	34,688	.....
Dec.	2,294,620	2,094,659	.....	43,470	29,902	.....

Another new 500-ton Lackawanna stack has been blown in, making two in the past four months. Other furnaces blown in include Burden at Troy, N. Y., one Wharton in New Jersey, Crumwold in the Lehigh Valley, a new 240-ton Temple in the Schuylkill Valley, North Cornwall in the Lebanon Valley, one Aliquippa in the Pittsburgh district, Alice, Fannie and Stewart in the Shenango Valley, Buena Vista in Virginia, one Bethlehem stack in Maryland, Top Mill in the Wheeling district, one Central and the old Zanesville stack in central Ohio, Jisco in southern Ohio, one Mayville in Wisconsin, one Colorado, and Alice furnace in Tennessee.

The furnaces blown out include Northern in northern New York, the old Temple stack in the Schuylkill Valley, Vesta in the lower Susquehanna Valley, Colebrook in the Lebanon Valley, one Josephine in western Pennsylvania, Big Stone Gap in Virginia on account of landslide, one National Tube in Ohio, Hamilton in southern Ohio, one Minnesota Steel, one North Birmingham in Alabama, and Standard in Tennessee.

Capacity in Blast August 1

The following table shows the number of furnaces in blast Aug. 1 in the different districts, also the number and daily capacity in gross tons of furnaces in blast July 1:

Coke and Anthracite Furnaces in Blast

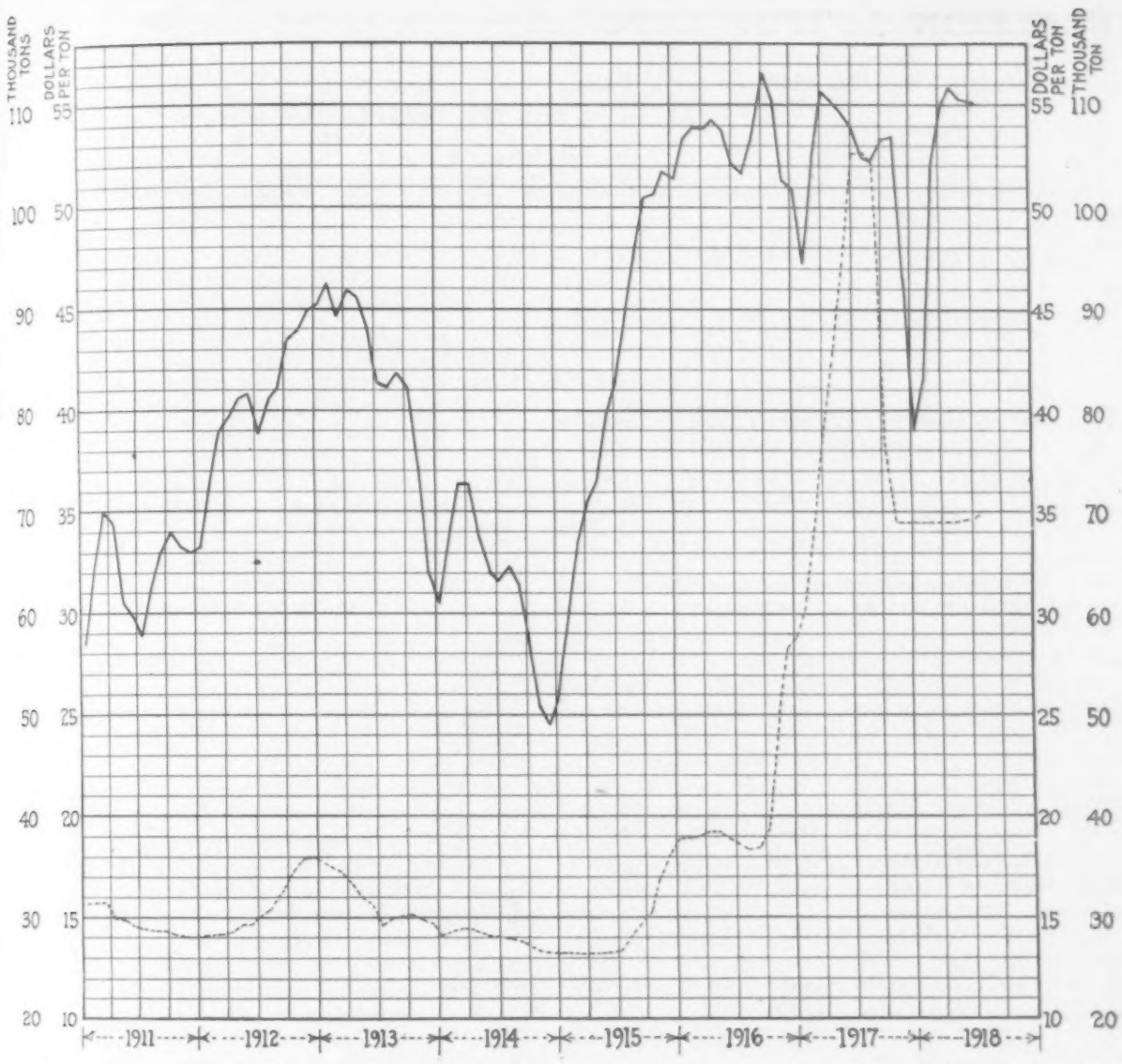
Location of furnaces	Total number of stacks	August 1 Number in blast	August 1 Capacity per day	July 1 Number in blast	July 1 Capacity per day
New York:					
Buffalo	21	21	7,032	20	6,754
Ferro	1	1	86	1	20
Other N. Y.	4	3	567	3	677
New Jersey	4	4	814	4	881
Ferro	1	1	23	0	0
Pennsylvania:					
Lehigh Valley	19	14	3,417	13	3,168
Spiegel	2	2	206	2	200
Schuylkill Val.	13	12	3,124	12	3,087
Ferro and Spiegel	2	1	80	1	78
Lower Susquehanna Valley	8	7	1,792	7	1,795
Ferro	2	1	38	2	89
Lebanon Val.	7	5	770	4	685
Ferro and Spiegel	3	2	119	3	188
Pittsburgh Dist.	53	52	22,134	51	23,200
Ferro and Spiegel	4	3	673	3	517
Shenango Val.	19	19	6,050	16	5,335
Western Pa.	25	21	6,017	22	6,230
Spiegel	3	2	210	2	173
Maryland	4	4	1,268	3	1,000
Wheeling Dist.	14	14	4,475	13	4,133
Ohio:					
Mahoning Val.	26	23	9,500	23	9,678
Central and Northern	26	24	9,926	23	9,409
Southern	17	15	2,186	15	2,269
Illinois and Ind.	39	38	18,546	38	17,947
Ferro and Spiegel	1	1	87	1	61
Mich., W.s. and Minn.	13	9	2,410	9	2,528
Col., Wash. & Mo.	7	5	1,025	5	1,035
Ferro and Spiegel	1	1	100	0	0
The South:					
Virginia	15	10	1,355	10	1,372
Ferro and Spiegel	4	3	125	3	106
Kentucky	7	5	650	5	654
Alabama	45	30	6,785	30	6,778
Ferro	1	1	35	1	35
Tenn. and Ga.	16	10	975	11	1,050
Total	427	364	112,600	356	111,130

The Record of Production

Production of Coke and Anthracite Pig Iron in the United States by Months Beginning Jan. 1, 1914—Gross Tons

	1914	1915	1916	1917	1918
Jan.	1 885 054	1,601,421	3,185,121	3,150,938	2,411,768
Feb.	1 888.670	1,674,771	3,087.212	2,645,247	2,319,299
Mar.	2 347.867	2,063,834	3.337 691	3,251,352	3,213,091
Apr.	2.269.655	2,116,494	3.227,768	3,334,960	3,288,211
May	2 092 686	2.263,470	3.361,073	3,417,340	3,446,412
June	1 917 783	2.380.827	3.211.588	3.270,055	3,323,791
July	1,957,645	2,563,420	3,224,513	3,342,438	3,420,988
7 mos.	14,359,360	14,664,237	22,634,966	22,412,330	21,423,660
Aug.	1.995,261	2,779,647	3,203,713	3,247,947	.....
Sept.	1,882,577	2.852,561	3,202,366	3,133,954	.....
Oct.	1,778.186	3,125,491	3.508 849	3,303,038	.....
Nov.	1.518.316	3,037,308	3.311.811	3,205,794	.....
Dec.	1,515,752	3 203 322	3,178,651	2,882.918	.....
Total, yr *	23,049.752	29,662,566	39,039,356	38,185,981	.....

*These totals do not include charcoal pig iron. The 1917 production of this iron was 376,525 tons.



The Full Line Represents the Daily Production of Pig Iron and the Dotted Line Is the Average of the Cost Per Ton of No. 2 Southern Pig Iron at Cincinnati, Local No. 2 Iron at Chicago and No. 2X Iron at Philadelphia

The figures for daily average production, beginning with January, 1911, are as follows:

Daily Average Production of Coke and Anthracite Pig Iron in the United States by Months Since Jan. 1, 1911—
Gross Tons

	1911	1912	1913	1914	1915	1916	1917	1918
Jan.	56,752	66,384	90,172	60,808	51,659	102,746	101,643	77,799
Feb.	64,090	72,442	92,369	67,453	59,813	106,456	94,473	82,835
Mar.	70,036	77,591	89,147	75,738	66,575	107,667	104,882	103,648
Apr.	68,836	79,181	91,759	75,665	70,550	107,592	111,165	109,607
May	61,079	81,051	91,039	67,506	73,015	108,422	110,238	111,175
June	59,585	81,358	87,619	63,916	79,361	107,053	109,002	110,793
July	57,841	77,738	82,601	63,150	82,691	104,017	107,820	110,354
Aug.	62,150	81,046	82,057	64,363	89,666	103,346	104,772	.....
Sept.	65,903	82,128	83,531	62,753	95,085	106,745	104,465	.....
Oct.	67,811	86,722	82,133	57,361	100,822	113,189	106,550	.....
Nov.	66,648	87,697	74,453	50,611	101,244	110,394	106,859	.....
Dec.	65,912	89,766	63,987	48,896	103,333	102,537	92,997	.....

Diagram of Pig-Iron Production and Prices

The fluctuations in pig-iron production from 1910 to the present time are shown in the accompanying chart. The figures represented by the heavy line are those of daily average production by months of coke and anthracite iron. The dotted curve on the chart represents monthly average prices of Southern No. 2 foundry pig iron at Cincinnati, local No. 2 foundry iron at furnace at Chicago and No. 2X at Philadelphia. They are based on the weekly market quotation of THE IRON AGE.

The Seattle district of the Railroad Administration has received orders to begin immediate movement to Japan of 25,000 tons of shipbuilding steel plate and pig iron, which have been held here in storage for months. Another shipment of 20,000 tons is en route to Seattle from Eastern steel mills.

Blast Furnace Notes

The Lackawanna Steel Co. tapped the first pig iron from its new No. 9 blast furnace at Lackawanna, N. Y., on July 31. This is the second furnace blown in by the company this year, the new No. 8 furnace having made its first iron on March 29.

The blast furnace at Big Stone Gap, Va., blew out on July 31, on account of a landslide on the Southern Railway, which stopped all trains.

The Texas Steel Co. now expects to blow in its furnace at Rusk, Texas, some time in August.

Alice furnace, at Sharpsville, Pa., which was blown out for relining and repairs on June 24, was blown in on July 20.

The furnace of the Emporium Furnace Co., at Emporium, Pa., will be blown out about Aug. 10 for relining and repairs.

The Seaboard Steel & Manganese Corporation blew out its old No. 1 stack at Temple, Pa., on July 14, and on July 26 blew in the new stack known as No. 2. The product in July was spiegeleisen.

The blast furnace of the Carnegie Steel Co. at Zanesville, Ohio, was blown in July 27. It had not been in operation since 1910. The blowing in of Zanesville furnace has been considered heretofore to mean that the last of the available pig-iron capacity has been wheeled into line.

The C. Lee Cook Co., Louisville, manufacturer of metallic packing, has been presented the first Government service flag awarded in Kentucky. This flag is given to companies which exceed their promises to the Government by 40 per cent or more.

Iron and Steel Markets

THE LABOR UNION ISSUE

New Prominence Given It in the Steel Industry

Pig Iron Production Stationary—Finished Steel Capacity Underestimated

The award of the War Labor Board to the machinists of the Bethlehem Steel Co., involving an eight-hour day, collective bargaining and the revision or discontinuance of the bonus system, is the most important event of the week to the steel trade. It brings up the whole question of the use of war exigencies to unionize open shops and of the extent to which the carrying out of the plans of militant unionism is to be put before united effort to hasten the ending of the war. That grave consequences are involved in the handling of the labor question as related to the steel industry is now more evident than ever.

In respect to steel supply and demand, the outcome of the week has been, first, a decision by the War Industries Board averse to creating the additional reservoir of ship steel asked for by Director-General Schwab; second, the gathering of data showing that the 33,000,000 tons of finished rolled steel which has been taken as the present annual capacity of the country, is considerably too low. In one stretch of five weeks, chiefly in May, it is shown that the rate was close to 38,000,000 tons of finished products per year.

It appears that the ship steel in process or in stock at shipyards and fabricating plants amounts to about 1,000,000 tons. While the War Industries Board did not consent to increase the present shipments of 50,000 tons a week of ship plates by 20,000 tons a week through the next quarter, or even by the 10,000 tons a week later asked for, its members are confident there will be no break in the shipbuilding program for lack of steel.

The deciding influence in the matter was the fear of members of the board that the impounding of additional definite tonnage for ship purposes might mean the suspension of small but in the aggregate important private industries.

Ways and means of increasing steel production have been carefully studied. But coal and coke labor are still the key, rather than extensions of rolling-mill capacity. So far as the latter is concerned, probably 1,000,000 tons more will be ready by Jan. 1, chiefly in plates, but partly in large rounds, the Steel Corporation now having a $750,000 mill for this purpose under construction in the Pittsburgh district.

The statistics for last month show that to increase pig iron output is no easy matter. In the 31 days of July the make was 3,420,988 tons, or 110,354 tons a day, against 3,323,791 tons in June, or 110,793 tons a day. The merchant furnaces increased their output nearly 2000 tons a day, as compared with June, while the steel works furnaces fell off nearly 2500 tons a day.

August humidity may bring down production, and probably will, but an increased rate would otherwise result from the blowing in of additional furnaces. The active list shows a net gain of 8 in July. The number in blast Aug. 1 was 364, with an estimated daily capacity of 112,600 tons against 356 on July 1 with a daily capacity of 111,130 tons.

France wants 44,000 tons of shell steel, part in December, but most of it in the first quarter of 1919. For Japanese government railroads the call is for 33,000 steel tires. The 10,000 additional cars for the American Expeditionary Forces have been allocated.

Work is now under way also on 20,000 tons of structural steel for the first sections of the Neville Island gun plant, which will take probably three years to build and equip in its entirety.

The distribution of 200,000 tons of rails for the Pershing operations in France has just been made, the leading interest receiving 127,000 tons and the remainder going to four independent mills. The plan to turn at once to rails several mills that have been rolling large rounds has just been changed to take care of 50,000 tons of shell steel that must be turned out in August.

In the Chicago district there is some agitation among implement manufacturers for a reduction in the price of bars, on the ground that steel cost is out of line with the present scale of profits in their industry. The movement is in anticipation of the late September conference at Washington on fourth quarter prices.

July tin plate production, estimated at 3,000,000 boxes, held up remarkably well. The annual rate is now not far from 1,900,000 net tons.

The selling of pig iron for 1919 has developed some differences of opinion between Washington and some of the producers. Some furnace companies have sold for the first six months in the effort to insure, as far as possible, that customers doing essential work would get the brands of iron they ordinarily used. Present allocations result in frequent changes in the old order of things, foundries having iron under contract getting little in some cases, the metal meanwhile being ordered to new buyers having more urgent work.

Pittsburgh

PITTSBURGH, Aug. 6—(*By Wire*).

An active canvass is in progress to determine the time and effort that would be involved in increasing the iron and steel output by new construction, and a decision will eventually be rendered by the War Industries Board and the other Government departments interested as to whether such new construction should be sanctioned. The investigation was undertaken by reason of the recently announced conclusion of the board that the steel requirements for the second half of the year are 20,000,000 net tons, while the expected production could not be taken at more than about 16,500,000 tons. Since that statement was made, the board has announced in addition that the prospective requirements for the first half of next year are 20,000,000 tons. It is a well known fact that many of the finishing mills could use much more ingot or billet tonnage than they are receiving. The question as to

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Aug. 6 1918	July 30 1918	July 9 1918	Aug. 8 1917
No. 2 X, Philadelphia	$34.40	$34.40	34.40	53.00
No. 2, Valley furnace	33.00	33.00	33.00	53.00
No. 2 Southern, Cincinnati	36.90	36.90	36.90	49.90
No. 2, Birmingham, Ala.	33.00	33.00	33.00	47.00
No. 2, furnace, Chicago*	33.00	33.00	33.00	55.00
Basic, deliv., eastern Pa.	32.90	32.90	32.90	50.00
Basic, Valley furnace	32.00	32.00	32.00	52.00
Bessemer, Pittsburgh	36.60	36.60	36.60	55.95
Malleable, Bess., Ch'go*	33.50	33.50	33.50	55.00
Malleable, Valley	33.50	33.50	33.50	55.00
Gray forge, Pittsburgh	33.40	33.40	33.40	46.95
L. S. charcoal, Chicago	37.85	37.85	37.85	58.00
Rails, Billets, etc., Per Gross Ton:				
Bess. rails, heavy, at mill	55.00	55.00	55.00	38.00
O.-h. rails, heavy, at mill	57.00	57.00	57.00	40.00
Bess. billets, Pittsburgh	47.50	47.50	47.50	90.00
O.-h. billets, Pittsburgh	47.50	47.50	47.50	90.00
O.-h. sheet bars, P'gh	51.00	51.00	51.00	90.00
Forging billets, base, P'gh.	60.00	60.00	60.00	125.00
O.-h. billets, Philadelphia	51.30	51.30	51.30	100.00
Wire rods, Pittsburgh	57.00	57.00	57.00	95.00
Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	3.73	3.73	3.73	4.659
Iron bars, Pittsburgh	3.50	3.50	3.50	4.75
Iron bars, Chicago	3.50	3.50	3.50	4.50
Steel bars, Pittsburgh	2.90	2.90	2.90	4.50
Steel bars, New York	3.145	3.145	3.145	4.669
Tank plates, Pittsburgh	3.25	3.25	3.25	9.00
Tank plates, New York	3.495	3.495	3.495	10.169
Beams, etc., Pittsburgh	3.00	3.00	3.00	4.50
Beams, etc., New York	3.245	3.245	3.245	4.669
Skelp, grooved steel, P'gh.	2.90	2.90	2.90	4.00
Skelp, sheared steel, P'gh.	3.25	3.25	3.25	6.00
Steel hoops, Pittsburgh	3.50	3.50	3.50	5.75

*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

Sheets, Nails and Wire,	Aug. 6 1918	July 30 1918	July 9 1918	Aug. 8 1917
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh.	5.00	5.00	5.00	8.50
Sheets, galv., No. 28, P'gh.	6.25	6.25	6.25	10.00
Wire nails, Pittsburgh	3.50	3.50	3.50	4.00
Cut nails, Pittsburgh	4.00	4.00	4.00	4.65
Fence wire, base, P'gh	3.25	3.25	3.25	3.95
Barb wire, galv., P'gh	4.35	4.35	4.35	4.85
Old Material, Per Gross Ton:				
Carwheels, Chicago	29.00	29.00	29.00	30.50
Carwheels, Philadelphia	29.00	29.00	29.00	35.00
Heavy steel scrap, P'gh.	29.00	29.00	29.00	33.00
Heavy steel scrap, Phila.	29.00	29.00	29.00	31.00
Heavy steel scrap, Ch'go.	29.00	29.00	29.00	29.00
No. 1 cast, Pittsburgh	29.00	29.00	29.00	34.00
No. 1 cast, Philadelphia	29.00	29.00	29.00	34.00
No. 1 cast, Ch'go, net ton	28.25	28.25	28.00	23.00
No. 1 RR. wrot., Phila	34.00	34.00	34.00	45.00
No. 1 RR. wrot., Ch'go, net	29.75	29.75	29.75	33.50
Coke, Connellsville, Per Net Ton at Oven:				
Furnace coke, prompt	$6.00	$6.00	$6.00	$13.00
Furnace coke, future	6.00	6.00	6.00	10.00
Foundry coke, prompt	7.00	7.00	7.00	14.00
Foundry coke, future	7.00	7.00	7.00	10.00
Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	26.00	26.00	26.00	28.00
Electrolytic copper, N. Y.	26.00	26.00	26.00	28.00
Spelter, St. Louis	8.10	8.00	8.62½	8.50
Spelter, New York	8.40	8.25	8.87½	8.75
Lead, St. Louis	7.75	7.75	7.75	10.75
Lead, New York	8.05	8.05	8.05	10.87½
Tin, New York	94.00	94.00	92.00	63.62½
Antimony (Asiatic), N. Y.	13.00	13.00	13.00	15.00
Tin plate, 100-lb. box, P'gh	$7.75	$7.75	$7.75	$12.00

these finishing mills is whether a larger tonnage of their particular products is required to help win the war. Inasmuch as there is additional plate rolling capacity soon to be completed, requiring additional steel, and the rolling of shell steel, which is required in increasing quantities, presents no difficulties, there is in prospect a still greater drain upon the steel output, and those finishing mills that are now receiving only enough steel to operate at 60 or 70 per cent of capacity are likely to receive less steel in future rather than more, unless much more steel is produced.

The investigation thus far indicates that if there is to be new construction, it should be of open-hearth furnaces and blast furnaces. While in the past two or three months the production of steel ingots has been at only about 90 per cent of rated capacity, it does not follow that the other 10 per cent could be made up by a corresponding increase in the steel-making capacity, because the restriction in steel output is due more to shortage of scrap than to shortage of pig iron. Therefore, an increase in the output of pig iron through the erection of additional blast furnaces would not be sufficient to meet the emergency. It appears probable, however, that more new blast furnace capacity would be provided than open-hearth steel capacity, according to the tentative program, because the heavy requirements of Great Britain, France and Italy in pig iron are being met, if at all, only with the greatest difficulty. The slight increase in the production of Connellsville coke in the past few weeks, and the almost continuous increase in the production of by-product coke make it probable that coke for additional blast furnaces could be provided without difficulty, and the matter of iron ore presents scarcely any difficulty. What will have to be decided in Washington, therefore, is whether it is proper to use the materials and power involved in the proposed new construction.

Steel mills report that the work of distributing their products to the different classes of war and near-war activities has been made still easier by the various new regulations promulgated by the War Industries Board last month, and the distribution is proceeding in quite orderly fashion with no difficulty except that there is not nearly enough steel to reach through the preference list, and in some cases not enough to reach the preference list at all, the entire production being taken up by priority orders. In the case of distributing steel to jobbers, the matter is so simple with some mills that they simply dispose of it by finding that they will have no steel available for the purpose. Steel for replacement of jobbers' stocks depleted by shipments under priorities and preferences is given a priority of B4, this becoming effective for September, replacing shipments made by jobbers in August. There is a difference of opinion, however, as to the special ruling giving the mills permission to ship during August a quantity of steel equal to the average shipped monthly during the first half of the year. Some mills interpret that as meaning that a priority of B4 is accorded while others maintain that there is no specified priority. The jobbers will, from all appearances, receive much better shipments of wire products and tubular goods than of sheets and merchant bars, while they are not likely to get tinplate, if at all, until after the canning season. The matter of shipping to jobbers an amount of steel each month equal to the shipments in the same month a year previous was mentioned in last report, but as a matter of fact there is no definite prospect that such a plan will be put in operation, and according to the existing regulations distribution after August will be in accordance with the regulations of July 3 involving replacement month by month.

Pig Iron.—The policy that many of the merchant furnaces have pursued in the past two or three weeks of selling pig iron in a limited way for delivery in the first half of next year does not meet approval at Washington and the furnaces are likely to be very particular in future as to making any such sales. Current sales for nearby deliveries are in almost all cases the result of allocations, the furnaces having practically no choice. Allocations are not altogether as heavy as they were, but there are very considerable

demands in prospect for Great Britain, France and Italy. With so many alterations, the majority of furnaces find that it will take practically until the end of the year to clear their order books even though the specific sales for the second half of the year represented but a small tonnage. While there has been considerable selling for the first half of next year, the proportion this tonnage constitutes of the prospective output is very small. W. P. Snyder & Co. announce the computations of average prices obtained on all sales of Valley iron in July at $35.20 for Bessemer iron and $32 for basic iron, these being the set Government limits. We quote:

Basic pig iron, $32; Bessemer, $35.20; gray forge $32; No. 2 foundry, $33; No. 3 foundry, $32.50, and malleable, $33.50, all per gross ton at Valley furnace, the freight rate for delivery in the Cleveland and Pittsburgh districts being $1.40 per ton.

Billets and Sheet Bars.—The majority of the steel mills would be quite willing to buy either billets or ingots in the open market, but there is practically no tonnage to be had. Some of the mills are regularly producing an excess of ingots or billets over what they finish themselves, but all such tonnage has already been allocated. There is much movement of unfinished steel from one point to another so as to put it through finishing mills whose product is most essential. There are cases in which this extra movement adds a cost of $5 to $8 a ton, this extra expense being incurred merely to put the raw steel into a preferred finished form. In the past two or three weeks, the distribution of sheet bars by the pool has not enabled the sheet mills to maintain an average operation of 60 per cent and all hopes of their reaching the 75 per cent rate, to which the Director of Steel Supply recently requested them to restrict themselves, have been abandoned. The danger now is that it will be necessary to restrict the sheet bar supply still further, but there is little question whether after the canning season the tinplate mills will still be given the 100 per cent supply they have been receiving so regularly of late. Odd lots of shell discard steel are occasionally to be picked up, but the great bulk of this material is being rolled for the War Department and on other war activities, as there are many finished products needed for the war work that can be made from this steel.

We quote 4 x 4 in. soft Bessemer and open-hearth billets at $47.50, sheet bars $51, forging ingots $73, and forging billets $60 base, all f.o.b. at mill, Pittsburgh or Youngstown.

Ferroalloys.—With the rigid conservation of manganese alloys now in force, the supplies are stretching better than expected, while there seems to be fairly safe provision made for supplies in the future, and there is much less uneasiness than there was. This is reflected by light inquiry on the part of the large users, who are covered well ahead, and no very active demand on the part of small users who usually buy as they go along.

We quote 70 per cent ferromanganese at $250 delivered, 16 per cent spiegeleisen at $75 at furnace and 50 per cent ferrosilicon for prompt shipment at $160 and for delivery over the last half of the year, $150 to $155 at furnace, the furnaces usually absorbing the freight.

We now quote 9 per cent Bessemer ferrosilicon at $54; 10 per cent, $55; 11 per cent, $58.30; 12 per cent, $61.60. We quote 6 per cent silvery iron, $41; 7 per cent, $43; 8 per cent, $45.50; 9 per cent, $47.50; 10 per cent, $50. Three dollars per gross ton advance for each 1 per cent silicon for 11 per cent and over. All the above prices are f.o.b. maker's furnace, Jackson or New Straitsville, Ohio, these furnaces having a uniform freight rate of $2 per gross ton, for delivery in the Pittsburgh district.

Structural Material.—The structural mills are operating very nearly full, but as some of them are producing shell rounds, their output of structural shapes is considerably below normal. Reports indicate that the Neville Island gun plant will require a very large tonnage of structural steel to be fabricated on short notice for the buildings, and perhaps also a large monthly tonnage for the guns themselves, as they are turned out. No structural jobs for unessential purposes are being proposed now, as it is universally understood that the fabricating shops and the mills could not entertain them. We quote beams and channels up to 15-in. at 3c. at mill, Pittsburgh, for third-quarter delivery.

Wire Products.—The majority of wire mills will have relatively little difficulty in carrying out the regulations of the War Industries Board as to shipping jobbers during August an amount of material equal to the average monthly shipments during the first half of the year. While the stock may not be distributed among the different items exactly as jobbers need to round out their stocks, it is believed the position of jobbers will be improved. Prices on wire products for third quarter are given on page 359.

Hoops and Bands.—Production is restricted by the scarcity of steel, but there is enough output to take care of priority orders fairly well, and a considerable tonnage is being distributed against the preference list. There is very little new buying. We quote hoops and bands at 3.50c., Pittsburgh, subject to the new list of standard extras promulgated last May.

Cotton Ties.—The production of cotton ties has kept fairly well ahead of the requirements, and there is no particular scarcity. Cotton ties for August delivery are $1.94 per bundle of 45 lb.

Shafting.—There is a fair production of the smaller sizes of shafting, but large sizes, 3 in. and larger, are extremely scarce, as the capacity of merchant mills rolling the rounds is largely engaged with shell steel work. We quote cold-rolled shafting at 17 per cent off a list in carloads and 12 per cent in less than carloads, f. o. b. Pittsburgh, for third quarter.

Nuts and Bolts.—The scarcity in nuts and bolts continues, and there is no prospect of early relief. Discounts on nuts and bolts for third quarter are given on page 359.

Rivets.—There continues to be considerable scarcity, and essential requirements are met with some difficulty. We quote button-head structural rivets at $4.40 and cone-head boiler rivets at $4.50 per 100 lb. Smaller rivets are 50 and 10 per cent off list, f. o. b. Pittsburgh, for third quarter.

Spikes.—Railroad requirements for spikes are not looming large, as there is difficulty in supplying new rails. Demand for small spikes and boat spikes continues insistent, and is met only with difficulty. We quote:

Standard sizes of railroad spikes 9/16 x 4½ in. and larger, $3.90 per 100 lb. in lots of 200 kegs of 200 lb. each, or in larger lots. Boat spikes, $5.25 per 100 lb., track bolts, $4.90 base in lots of 200 kegs or more; less than 200 keg lots, $1 per 100 lb. extra. All f.o.b. Pittsburgh.

Hot-Rolled Strip Steel.—The war situation has developed a number of new users of hot-rolled strip steel who formerly used blue annealed sheets and cut them to size. There has also been some use made of strips to take care of the increased demand for light plate and blue annealed sheets where narrow gages are required. The demand for such material, it is explained by the strip mills, could be satisfied to a much greater degree if buyers would take advantage of the facilities of strip mills whenever widths under 16 in. are required. This would relieve the pressure from sheet and light plate mills and place the business in directions where capacity is not now overtaxed, and at the same time insure greater accuracy in both widths and gages. In this particular field, too, no priority orders are necessary where Government order number is given, or where it is accompanied by an affidavit that it is for war work. Any of the hot mills can furnish this material within about 30 days, as strip mills are now operating to between 65 and 75 per cent of capacity, and about 60 per cent of their present output may be classed as strictly war work. We quote hot-rolled strip steel at $3.50 per 100 lb. f. o. b. Pittsburgh, with 50c. additional per 100 lb. for special stamping quality, f. o. b. Pittsburgh.

Cold-Rolled Strip Steel.—The limitations placed on production by the Government and a closer scrutiny and definition of strictly war essentials, together with the increased operating costs, due largely to wage advances, has drawn attention to the narrowing limits between costs and fixed selling prices, and mills look forward to a readjustment of prices. Practically the entire tonnage is classed as essentials, and mills are operating to only about 60 per cent of capacity. Jobbers' specifications are being closely watched, in view

of the recent ruling granting them each month only the average of the past six months. We quote:

We quote cold-rolled strip steel at $6.50 per 100 lb., f.o.b. Pittsburgh, terms 30 days, less 2 per cent for cash in 10 days when sold in quantities of 300 lb. or more. Freight is allowed to destination when it does not exceed 31c. per 100 lb.

Skelp.—Such skelp as is being produced is going through its usual channels, and nothing is coming into the open market.

We quote grooved skelp at $2.90; universal skelp, $3.15, and sheared skelp, $3.25 base. Special skelp for boiler tubes, etc., is $3.40 for base sizes and $3.55 for other sizes, all prices being per 100 lb. f.o.b. Pittsburgh.

Plates.—A very considerable tonnage of plates is now being rolled for freight cars, as it is found this can be done without especially menacing the shipbuilding program. Not as large a proportion of this car plate tonnage is being rolled in Bessemer steel as was expected, since it turns out that Bessemer steel is nearly as scarce as open-hearth. We quote ¼-in. and heavier sheared plates for third quarter delivery at 3.25c. at mill Pittsburgh.

Iron and Steel Bars.—Some of the smaller merchant mills, particularly 10-in. and 12-in., are filled practically full with direct Government orders, and thus have no product available for the purposes that stand any way down in the preference list, even though they are fairly well supplied with steel. The larger merchant mills are gaited to relatively low rates of operation by the steel supply, as they have not as much Government business scheduled for them, and thus there is a decided scarcity of merchant steel bars of all specifications. The question is raised in some quarters whether the floating supply of merchant bars in the hands of jobbers and manufacturing consumers is not being depleted to a serious extent by the restrictions necessarily imposed. Iron bars are scarce, but are not nearly so difficult to obtain as steel bars. The ordinary user of steel bars can hardly take iron bars instead, as there is a difference in the manner of working and there is also a very important difference in the price. We quote soft steel bars rolled from billets at 2.90c., from old steel rails at 3c. and refined iron bars at 3.50c. at mill Pittsburgh for third quarter delivery.

Tin Plate.—Published reports that there is a 30 per cent shortage in tin plate, or any kind of a serious shortage, are vigorously denied by the tin plate makers, who assert that on the other hand they have produced much more tin plate in the past three months than there was reason to expect, and that all essential wants are being well taken care of. Food requirements are being met from month to month and if the steel supply holds out, the tin plate mills will be able to take care of other important lines of consumption when the food crops are out of the way. While complete reports of production in July are not available, the indications are that the month's output was about 3,000,000 boxes, or about the same as the June output. Production up to July 1 was a trifle over 17,000,000 boxes, so that July made the unprecedented record of producing approximately as much tin plate and probably more than the average in the preceding six months. Usually there is a large drop in production in July. The majority of mills made a larger output in July than in June, but a few had some serious decreases on account of difficulties with equipment and men. There was no restriction on account of steel shortage. We quote tin plate for third quarter at $7.75 per base box f.o.b. Pittsburgh made from Bessemer or open-hearth stock, although scarcely any of the latter is available. Prices on terne plate for third quarter are given on page 359. The production of terne plate is much below normal and most of the output is going to fill Government requirements.

Sheets.—Operations of sheet mills have decreased somewhat in the past fortnight, and are under rather than over 60 per cent of capacity. There is little prospect that the supply of sheet bars will increase materially, if at all, and the most rigid regulation of the distribution of the limited sheet output is regarded as imperative. While some of the mills may be able to make a fair distribution to jobbers in accordance with the recent regulations of the War Industries Board, the majority feel that they cannot meet the full requirements of their jobbing customers. Prices on sheets are given in detail on page 359.

Wire Rods.—Rod mills continue to operate at an average rate of about 60 per cent, but some are doing better than this and some not as well. There is practically no rod tonnage available in the open market. Prices on rods for third quarter are given on page 359.

Wrought Pipe.—There will be a moderately heavy distribution of pipe to jobbers this month in accordance with the permission given by the War Industries Board in its ruling of July 23, whereby mills are, if possible, to ship jobbers a tonnage equal to one-sixth the tonnage shipped them during the first half of the year. This will give jobbers an opportunity to sort up their sizes to an extent. Production of standard pipe has been somewhat lower in July than in two or three months previous, but heavier production is expected for August. Discounts on iron and steel pipe are given on page 359.

Boiler Tubes.—Producers continue in the position of being far oversold on boiler tubes for Government orders and important uses on the preference list and there is no material available in the open market. Discounts on iron and steel boiler tubes are given on page 359.

Coke.—The first battery of 128 by-product coke ovens at the Clairton plant of the Carnegie Steel Co. is now in operation and the product proves sufficient for the operation of the three Clairton blast furnaces, which are rated at 450 tons a day each. The second battery will probably begin making coke within 30 days. One half the new Lorain plant of the National Tube Co. is in operation and doing well, while the other half will probably be placed in operation within 30 to 60 days, making 208 ovens altogether at Lorain. Conditions in the Connellsville region have improved somewhat, output being well maintained at the higher rate recently attained and the shipments of raw coal from the region have improved. The new rulings as to screened coke and other special descriptions of material have been fully interpreted. Coke screenings from old dumps, when entirely clean, as well as new screenings may be sold up to $6, while when screened as to a size a price as high as $7.30 may be asked. The market thus far has not paid above $6.50. The clean screenings under ¾-in. may be sold at $5. Output of coke in the Connellsville and Lower Connellsville region in the week ending July 27 was 352,625 tons, an increase of 975 tons over that of the previous week. We quote furnace coke at $6; 72-hr. selected foundry coke at $7 and crushed coke, over ¾ in. at $7.30, these being Government prices and all in net tons at ovens.

Old Material.—Market supplies of scrap continue to decrease and no hope is entertained that supplies are going to improve. Mills buying scrap complain of the quality, as there is not nearly enough heavy melting steel. Mills with Bessemer departments are faring better than others, as these Bessemer departments produce scrap that can be used in the open-hearth.

Heavy steel melting scrap, Steubenville, Follansbee, Brackenridge, Monessen, Midland and Pittsburgh, delivered	$29.00
No. 1 cast scrap (for steel plants)	29.00
Rerolling rails, Newark and Cambridge, Ohio, Cumberland, Md., Franklin, Pa., and Pittsburgh	34.00
Hydraulic compressed steel scrap	29.00
Bundled sheet scrap, sides and ends, f.o.b. consumer's mills, Pittsburgh district	$27.50 to 29.00
Bundled sheet stamping scrap	22.00 to 23.00
No. 1 busheling scrap	28.00 to 29.00
Railroad grate bars	18.00 to 19.00
Low phosphorus melting stock (unguaranteed)	34.00
Low phosphorus melting stock (guaranteed)	36.50
Low phosphorus melting stock (bloom and billet ends, heavy plates)	39.00
Iron car axles	46.00 to 46.50
Locomotive axles, steel	46.00 to 46.50
Steel car axles	46.00 to 46.50
No. 1 busheling scrap	28.00 to 29.00
Machine shop turnings	19.00
Cast iron wheels	29.00
Rolled steel wheels	36.00
Sheet bar crop ends (at origin)	35.00
Cast iron borings	19.00
No. 1 railroad wrought scrap	34.00
Heavy steel axle turnings	24.00
Heavy breakable cast scrap	28.00 to 29.00

Chicago

CHICAGO, Aug. 5—(*By Wire*).

Independent mills have met the wage advance of 10 per cent given by the Steel Corporation. While this imposes more burden on them, they are more concerned with the Washington announcement of the War Labor Board in regard to the employees of the Bethlehem Steel Co. and the projected organization of labor in the steel industries. It is in connection with the latter plan that Samuel Gompers has been in Chicago for several days. If three shifts should be inaugurated in mills now working two shifts it is a grave question where the additional employees will come from.

The revised priority and automatic classification regulations have hardly been digested as yet, and opinions are not expressed. At least some of the jobbers are not yet in a way to be satisfied. One mill has offered to enter their orders for one-third of whatever products they receive in the first six months of the year, but shipping is another question. They were of the opinion that when the War Industries Board said they could have for August the equivalent of the monthly average for the first six months, it meant a guarantee that they would receive stock. But the mills have to consider other priorities, which in innumerable cases are more urgent.

It is reported that agricultural implement makers are seeking a reduction in the cost of their raw material, and that on bars as much as $5 a ton has been mentioned. Their plea is that they delayed too long in advancing their prices for implements, that they cannot ask more at this time and that existing prices of raw material do not allow them a fair profit and that their only hope lies in a reduction in the cost of material to them.

Because of intimations that the Government disapproves of contracts for pig iron to be delivered in 1919 the furnaces have stopped taking such business until the future needs of the Government are more clearly defined.

Ferroalloys.—The gray iron foundries are taking considerable 10 to 15 per cent ferrosilicon and there is notable inquiry for 50 per cent ferrosilicon. Also active is 40 per cent ferromanganese. The local producer of ferromanganese made only 950 tons of ferromanganese last month, but produced 2753 tons of spiegeleisen.

Plates.—The leading interest will be a week or more in finishing up its Japanese shipments on which it has been concentrating for over a month, and this concluded, its chief concern will be material for Government cars.

The official mill quotation is 3.25c., Pittsburgh, the freight to Chicago being 27c. per 100 lb. Jobbers who have stock quote 4.52c.

Pig Iron.—A goodly tonnage for 1919 delivery has been booked, especially by Northern furnaces, but selling for that far ahead has come to a stop because of Government intimations that it is desirable to wait until future essential needs are more clearly defined. So far as the remainder of this year is concerned, the chief concern of the furnaces lies in the distribution of iron in a manner that will work out for the best interests of the nation's war needs, and doing this is becoming more complicated than ever inasmuch as the conditions which must govern deliveries are constantly changing. A melter reporting May 1, for instance, that he had Government business amounting to 50 per cent of his capacity may now have 75 per cent or more, and he is entitled to more iron than when he filled out the questionnaire. Under these conditions, most of the sellers are posting themselves on the requirements and stock conditions of their customers and would-be customers, and are shipping in a manner calculated to provide for urgent essential needs. In not a few instances, they have refused to ship at all to foundries engaged on the less essentials, as in the case of a manufacturer of piano plates. Quantities delivered on contract are being cut, and it seems much more evident that many not engaged on essentials will not get pig iron. Because of the high freight rates from Birmingham, several Northern foundries are regarding Northern iron with greater favor, some having placed business that ordinarily would have gone to Southern furnaces.

The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable, and steel-making irons, which are f.o.b. furnace, and do not include a switching charge averaging 50c per ton:

Lake Superior charcoal, Nos. 2 to 5	$38.00
Lake Superior charcoal, No. 6 and Scotch	$39.50 to 41.00
Northern coke foundry, No. 1	33.50
Northern coke foundry, No. 2	33.00
Northern coke foundry, No. 3	32.50
Northern high-phosphorus foundry	33.00
Southern coke, No. 1 foundry and No. 1 soft	39.50
Southern coke, No. 2 foundry	38.00
Malleable	33.50
Basic	32.00
Low phosphorus (copper free)	53.00
Silvery, 7 per cent	46.20

Bars.—Efforts are being made to secure lower prices for the agricultural implement manufacturers, but nothing official has been said on the matter. It is known, however, that the implement makers were slow in raising their prices, that they cannot ask the farmer at this time to pay more, and that their profits are not what they should be, in view of all which they assert they should have cheaper raw material. Rail-carbon bar business is restricted to the amount of rails procurable. The bar iron mills are not especially busy.

We quote, mill prices, mild steel bars at 2.90c., Pittsburgh, taking a freight rate to Chicago of 27c. per 100 lb. Bar iron is quoted at 3.50c., Chicago, and rail carbon at 3c., Chicago, a leading maker having adhered to Chicago as the basing point. Jobbers' prices follow:

Soft steel bars, 4.17c.; bar iron, 4.17c.; reinforcing bars, 4.17c., base. No extra charge for twisting ¾-in. and over; 2½c. for twisting ⅝, 11/16, ½ and 9/16; 5c. for 7/16 and ⅜; 10c. for 5/16 and 15c. per ¼-in. Extras as per card are charged for small sizes. Shafting, list plus 13 per cent.

Structural Material.—The American Bridge Co., will supply 117 tons for cranes to the Federal Shipbuilding Co. and the Fulton Steel Corporation. The Hanks Iron & Wire Works will supply 100 tons for a foundry extension to the Filer & Stowell Co., Milwaukee, Wis. An unknown bidder will fabricate 107 tons for the Men's Hospital for Insane, Evanston, Wyo. The Acme Steel Goods Co.'s new mill at Riverdale, Ill., will require 600 tons of concrete reinforcing bars. General conditions in shapes are unchanged.

The official mill quotation is 3c., Pittsburgh, which takes a freight rate of 27c per 100 lb. for Chicago delivery. Jobbers quote 4.27c. for material out of warehouse.

Wire Products.—As in most other lines, Government requirements are the leading feature. For prices, see finished iron and steel f.o.b. Pittsburgh, page 359.

Sheets.—Lack of steel keeps the mills operating at about 65 per cent of capacity. The Government is a large buyer, especially for the heavier gages. For mill prices, see finished iron and steel f.o.b. Pittsburgh, page 359.

Chicago delivery out of stock, regardless of quantity, No. 10 blue annealed, 5.52c.; No. 28 black, 6.52c., and No. 28 galvanized, 7.77c.

Bolts and Nuts.—So inadequate are the quantities of raw material the makers are receiving that even indirect Government business cannot be always taken. Priority orders have not been effective in bringing about the delivery of the total quantities specified. For mill prices and freight rates, see finished iron and steel f.o.b. Pittsburgh, page 359.

Structural rivets, 5.67c.; boiler rivets, 5.77c.; machine bolts up to ⅜ x 4 in., 37½ per cent off; larger sizes 25 and 5 off; carriage bolts up to ⅜ x 6 in., 32½ off; larger sizes, 20 off; box pressed nuts, square, tapped, $1.05 off; hexagon tapped, 85c. per 100 lb.; coach or lag screws, gimlet points, square heads, 40 per cent off.

Rails and Track Supplies.—Except that the production of rails is maintained at a higher rate there are no features.

Standard railroad spikes, 4.11½c., Chicago. Track bolts, with square nuts, 5.11½c., Chicago. Tie plates, steel, 3.25c.; tie plates, iron, 3.75c.; f.o.b. maker's mill. The base for light rails is 3c., f.o.b. maker's mill for 25 to 45-lb. sections, lighter sections taking Government extras.

Cast Iron Pipe.—Argyle, Minn., placed 300 tons on which it took bids with the United States Cast Iron Pipe & Foundry Co., and Madison, Wis., gave 120 tons to the American Cast Iron Pipe Co. No new proposi-

tions are out, but the shops have plenty of special work, considerable of which is for the Government.

We quote per net ton f.o.b. Chicago ex-war tax as follows: Water pipe, 4-in., $64.80; 6-in. and larger, $61.80. Class A and gas pipe $1 extra.

Old Material.—Eastern mills are more insistent in their search for Western steel scrap, but the Subcommittee on Iron and Steel Scrap of the American and Steel Institute is less willing to let it leave this territory. It is understood that local consumers who have not so far satisfied their own needs have protested against their natural supply being diverted from them. Meanwhile the market for melting steel is strong, and cast scrap is showing additional strength. The Wabash and Soo Lines have issued small lists.

We quote for delivery in buyers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Old iron rails	$39.00
Relaying rails	$55.00 to 60.00
Old carwheels	29.00
Old steel rails, rerolling	34.00
Old steel rails, less than 5 ft	34.00
Heavy melting steel	29.00
Frogs, switches and guards, cut apart	29.00
Shoveling steel	29.00
Steel axle turnings	24.00
Per Net Ton	
Iron angles and splice bars	$34.82
Iron arch bars and transoms	41.50
Steel angle bars	30.36
Iron car axles	41.52
Steel car axles	41.52
No. 1 railroad wrought	$29.75 to 30.36
No. 2 railroad wrought	28.25 to 28.75
Cut forge	28.25 to 28.75
Pipes and flues	24.50 to 25.00
No. 1 busheling	26.50 to 27.00
No. 2 busheling	18.50 to 19.00
Steel knuckles and couplers	30.36
Coil springs	30.36
No. 1 cast scrap	28.25 to 28.75
Boiler punchings	32.00 to 33.00
Locomotive tires, smooth	40.50 to 41.52
Machine-shop turnings	15.75 to 16.25
Cast borings	16.50 to 16.96
Stove plate and light cast scrap	23.50 to 24.00
Grate bars	23.75 to 24.25
Brake shoes	24.25 to 24.75
Railroad malleable	30.36
Agricultural malleable	29.00 to 30.00
Country mixed scrap	21.00 to 21.50

Philadelphia

PHILADELPHIA, Aug. 6.

Under the new rules and regulations promulgated by the Director of Steel Supply and the Priorities Division of the War Industries Board, the steel supply situation is tighter than it has ever been since the Government took control of distribution. Jobbers are the only steel buyers who have benefited by the recent statements. For consumers who cannot obtain high-rated priority certificates, the situation is more difficult than before.

A commission of trade experts will soon reach England from this country to study the raw materials situation, including iron and steel, in the light of Great Britain's experience. The steel men on the commission, it is understood, will examine carefully the methods of exchange of steel products between the United States and England.

In the local pig iron trade, the chief discussion concerns the policy of selling now for delivery in the first half of next year. Very plain hints of disapproval of the policy of making commitments so far ahead have come from Washington. No selling has been done for 1919 in this market, but pressure is being brought to bear by consumers who would like to have their requirements for the first half of next year placed on the books of furnaces.

The steel distribution committee of the American Iron and Steel Institute has allocated 200,000 gross tons of 80-lb. rails for the American Expeditionary Forces in France. Shipment is to be at the rate of 40,000 tons a month beginning at once. The Japanese Government is seeking early delivery on 33,000 locomotive and car tires. The Railroad Administration has placed an additional order for 510 locomotives with the Baldwin Locomotive Works, as mentioned in THE IRON AGE last week.

Pig Iron.—The American Pig Iron Association at its monthly meeting last Thursday in Philadelphia discussed the policy of selling iron for 1919 delivery. The discussion was precipitated by the action of a Middle West distributer and an eastern Pennsylvania furnace in notifying their customers that they were prepared to book their orders for the first half of next year, subject, of course, to the usual restrictions due to war demands. While no official action was taken by the War Industries Board, it has become known that the policy of selling for next year is not approved at Washington. Opposing views were presented at the meeting of the pig iron association, a few holding that there was no harm in placing the orders of regular customers on the books, providing, of course, they are doing war work. Others thought nothing was to be gained by such a course, pointing out that all who are entitled to iron for war work will get it in due time. The willingness of some distributers and furnaces to sell now for 1919 is due to a desire to protect regular customers. There is criticism by some in the trade because of the large allocations in favor of consumers who have never been their customers in normal times. Iron sellers naturally would like to preserve their old connections to as great an extent as possible under existing conditions. No business has been booked by local sellers for next year, but there is considerable informal inquiry for both steel-making and foundry grades. A Virginia furnace which did not sell ahead for the second half disposed of 4000 tons of foundry iron last week to regular customers, limiting sales to two carloads each. Shipments will be made promptly, if not interfered with by Government allocations. In the case of several small foundries, this iron staved off threatened shutdowns. Sellers are obtaining in most instances written statements from consumers showing the use to which iron is to be put. If iron is obtained by any consumer by false statement, the War Industries Board has the power, and would undoubtedly exercise it, to shut off supplies of all raw materials to the offender. Between 15,000 and 20,000 tons of low phosphorus iron, for several consumers, was allocated last week by Leonard Peckitt of the Empire Steel & Iron Co., Catasauqua, Pa., who is in charge of this work for the War Industries Board. The Heyward Steel Co., Pittsburgh, which has recently acquired a steel castings works at New Cumberland, W. Va., is inquiring in this market for 3000 tons of Bessemer iron. We quote standard grades of iron f.o.b. furnace, except Virginia, iron, for which the delivered prices are quoted:

Eastern Pennsylvania No. 1 X	$34.50
Eastern Pennsylvania No. 2 X	33.50
Eastern Pensylnvania No. 2 foundry	33.00
Virginia No. 2 X (including freight)	37.60
Virginia No. 2 foundry (including freight)	37.10
Basic	32.00
Gray forge	32.00
Bessemer	35.20
Standard low phosphorus	53.00
Low phosphorus (copper bearing)	50.00

Iron Ore.—A local importing firm has received permission to bring low phosphorus iron ore from Spain to this country, but importation is not at present feasible owing to high freight rates which would make the cost of the ore laid down at this port prohibitive. The Government is said to be anxious to increase the low phosphorus ore supply, however, and some way may be found to overcome the obstacle of high importing costs.

Coke.—No complaint is heard as to deliveries of coke to blast furnaces and foundries, all consumers on essential work apparently being kept well supplied. We quote 48-hr. furnace coke at $6 and 72-hr. foundry coke at $7 f.o.b. Connellsville.

Ferroalloys.—Consumers show little interest in ferromanganese and spiegeleisen for any delivery. A few sales of both alloys in small tonnages have been made for 1919 by a leading interest. Prices continue firm, $250 for 70 per cent ferromanganese f.o.b. furnace, with freight allowed, and $75 for 16 to 18 per cent spiegeleisen f.o.b. furnace.

Billets.—A Philadelphia steel company has been allocated 12,500 tons of 4 x 4-in. billets for rerolling into

rods for making ship rivets. The billets are to go to the Bethlehem Steel Co. The order specifies delivery over the remainder of this year. We quote 4 x 4-in. open-hearth rerolling billets at $51.30 Philadelphia.

Rails.—The steel distribution committee of the American Iron and Steel Institute has allocated 200,000 gross tons of rails to several steel companies for shipment to the American Expeditionary Forces in France at the rate of 40,000 tons a month, beginning at once. The United States Steel Corporation takes the largest part, 126,800 tons, the remainder being divided as follows: Bethlehem Steel Co., 25,200 tons; Colorado Fuel & Iron Co., 16,000 tons; Lackawanna Steel Co., 16,000 tons; Cambria Steel Co., 16,000 tons. Eighty-lb. A. R. A. rails, type B, are specified. Open-hearth or Bessemer steel may be furnished at the option of the mills. The price is left open pending an agreement between the general committee of the American Iron and Steel Institute and the War Industries Board.

Tires.—The Japanese Government is in the market for 33,000 locomotive and car tires for shipment as soon as possible. The business will be placed by leading Japanese exporting houses. Quotations are now being made by several producers. No Government price has been fixed on tires, but the tonnage recently sold to the Railroad Administration was booked at 7c. per lb.

Plates and Shapes.—The launching of the first fabricated ship at Hog Island on Monday initiates a program of ship manufacturing at that plant that will necessitate speeding up by mills and fabricating shops. Careful inspection of all fabricating shops at work for the Hog Island and Submarine Boat yards will now be inaugurated so that no shortages of steel or other difficulties will impede the progress of the work. The Railroad Administration has placed an additional order for 510 locomotives with the Baldwin Locomotive Works. An eastern Pennsylvania mill has received an order for 10,000 tons of plates for these locomotives. Owing to the new priority regulations, a leading plate mill is asking all customers having old orders on its books to obtain priority or cancel the order. The structural steel market is quiet, but mills are shipping heavily for shipyards and Government buildings. We quote plates at 3.48c. and shapes at 3.23c. Philadelphia.

Old Material.—Stove plate and grate bars continue in good demand, with prices rising close to the maximum of $29. We note sales of stove plate at $28 to $29 and grate bars at $27.50 to $28.50. There are no other price changes. Demand for practically all grades is greater than the supply. Heavy melting steel is hard to get. Nearly all producers have contracted ahead for the sale of their supply, and dealers are finding it more and more difficult to procure material. A. M. Wood & Co., Philadelphia, were high bidders and obtained an accumulation of scrap at the Hog Island shipyard. We quote for delivery at buyers' yards, eastern Pennsylvania, as follows:

No. 1 heavy milling steel	$29.00
Steel rails, rerolling	34.00
No. 1 low phosphorus heavy, 0.04 and under	39.00
Low phosphorus, 0.04 and under	36.50
Low phosphorus, 0.06 and under	$32.00 to 34.00
Old iron rails	39.00
Old carwheels	29.00
No. 1 railroad wrought	34.00
No. 1 yard wrought	33.00
Country yard wrought	29.00
No. 1 forge fire	28.00 to 29.00
Bundled skeleton	28.00 to 29.00
No. 1 busheling	31.00
No. 2 busheling	17.00 to 18.00
Turnings (for blast furnace use)	18.00 to 19.00
Machine shop turnings (for rolling mill use)	18.50 to 19.00
Cast borings (for blast furnace use)	18.00 to 19.00
Cast borings (clean)	19.00
No. 1 cast (for steel plant use)	29.00
No. 1 cast (cupola sizes)	33.00 to 34.00
Grate bars	27.50 to 28.50
Stove plate	28.00 to 29.00
Railroad malleable (for steel plants)	26.00 to 27.00
Railroad malleable (for malleable works)	31.00 to 32.00
Wrought iron and soft steel pipes and tubes (new specifications)	33.00
Ungraded pipe	29.00

Iron and Steel Bars.—Bar iron mills have all the business they can handle. The steel bar situation is exceedingly tight. Large rounds will become scarcer owing to the rerolling of rails on mills which have been working on shell bars. We quote soft steel bars at 3.13c. and bar iron at 3.73c. Philadelphia.

Sheets.—Sheet mills are working at 75 per cent of normal capacity, but are not as fully sold up on Government work as makers of plates, shapes and bars. The result is that very fair tonnages are being released to jobbers, with good deliveries. We quote No. 10 blue annealed sheets at 4.48c.; No. 28 black at 5.23c., and No. 28 galvanized at 6.48c., all Philadelphia.

Cleveland

CLEVELAND, Aug. 6.

Iron Ore.—A new record for ore shipments was established during July, when the total Lake movement amounted to 10,659,203 gross tons. The previous record for one month was in July, 1917, when the movement amounted to 10,241,633 tons. The total shipments until Aug. 1 also broke former records for the same period, amounting to 29,608,933 tons, as compared with 26,376,768 tons during the same period last year and 29,365,724 tons during the record-breaking season in 1916. July shipments would have been somewhat larger had it not been for the dock strike at Superior. It is expected that the movement until Oct. 1 will reach 50,000,000 tons, so that during that month considerable of the vessel capacity can be diverted to the grain trade. At a meeting of the Lake Carriers' Association held in Cleveland last week, it was decided to advance sailors' wages on the Great Lakes approximately 10 per cent, effective Aug. 1. The matter was referred to the committee to work out the details. A resolution was adopted reaffirming the desire of the association to co-operate in all ways with the Government and calling for immediate steps to be taken by the officers and mobilization committee to ascertain the desires and requirements of the Shipping Board. At a conference held in Washington Aug. 1 with the labor adjustment commission of the Shipping Board, an agreement was signed by nearly all of the independent ship owners and the unions of Great Lakes seamen, firemen and stewards. It is expected that the agreement will prevent future disputes between the independent vessel owners and the unions. The shipping board's labor adjustment commission has under consideration wage increases for the organized labor on the Lake vessels. We quote, f.o.b. lower Lake docks, as follows:

Old range Bessemer, $6.40; old range non-Bessemer, $5.65; Mesaba Bessemer, $6.15; Mesaba non-Bessemer, $5.50.

Pig Iron.—No diminution in either number or volume of inquiries appears in the Cleveland district, but sellers are simply filing these inquiries for the most part while awaiting the action of the allocation organization of the American Iron and Steel Institute. Railroad service in this territory is reported as fair, so that deliveries are going forward regularly. However, some melters now are convinced they will be unable to get supplies, notably the stove founders, who are especially hard hit. Little or no Southern iron is getting into this territory, producing interests admitting not only shortage of cars in the South but also smaller production of iron than they had figured on. For some melters in northern Ohio, this condition is becoming most serious and they are facing possible shutdowns later in the year. A lot of 15,000 tons of basic pig iron for shipment to France has come up for allocation. In the past week, fully 100,000 tons of iron has been allocated by the Committee on Pig Iron, Iron Ore and Lake Transportation, one-half of which has been foundry grades. It is expected that 50,000 tons additional of basic iron will be allotted Southern furnaces under the 185,000 ton inquiry for shipment to England. This will mean that the remaining 35,000 tons will be assigned to the Cleveland producer who already has taken 65,000 tons, making his total tonnage booked on this one order 100,000 tons. While he is planning to take care of his foundry iron contracts, it is expected he will begin turning over his furnaces to basic iron. The 14,000 tons basic inquiry

for northern Ohio has not been allocated as yet. The total tonnage allocated by the committee since May has reached 550,000 tons. We quote Cleveland delivery as follows:

Bessemer	$36 60
Basic	33.40
Northern No. 2 foundry	33.40
Southern No. 2 foundry	38.00
Gray forge	32.40
Ohio silvery, 8 per cent silicon	47.90
Standard low phosprorus, Valley furnace	53.00

Nuts, Bolts and Rivets.—Since shops in the Cleveland district are well filled with business, possibly for four to six months, it is expected the placing of bolts and nuts in Class C by the priority committee of the War Industries Board will simply complicate matters of delivery until the system is arranged. Class C material will simply be put forward on the books to the exclusion of other material and other business will be sidetracked for the time being. The 6500-ton order for rivets for the Hog Island yard has not been placed.

Old Material.—Demand continues for most grades of scrap but more difficulty is being experienced in filling orders because of the growing scarcity of certain grades. This has resulted in further stiffening of quotations, although sales have not been large. The largest prospective lot of scrap coming out involves the old Superior viaduct which the city of Cleveland may offer for figures. We quote delivered consumers' yards in Cleveland and vicinity as follows:

	Per Gross Ton	
Steel rails	$28.00 to	$29.00
Steel rails, under 3 ft		34.00
Steel rails, rerolling		34.00
Iron rails		39.00
Iron car axles		46.50
Steel car axles		46.50
Heavy melting steel		29.00
Cast borings	18.50 to	19.00
Iron and steel turnings and drillings	18.25 to	18.75
No. 1 railroad wrought		34 00
Hydraulic compressed sheet scrap	28.00 to	29.00
Cast-iron car wheels, unbroken		29.00
Cast-iron car wheels, broken		34.00
Agricultural malleable	29.00 to	30.00
Railroad malleable		34.00
Steel axle turnings		24.00
Light bundled sheet scrap	24.50 to	25.00
Cast-iron scrap		29.00
Cast-iron scrap, broken to cupola size	32.00 to	33.00
No. 1 busheling	29.00 to	30.00
Per Net Ton		
Railroad grate bars	$23.00 to	$24.00
Stove plate	22.50 to	23.00

Finished Iron and Steel.—Sheet mills in the Youngstown district, according to information received here, are finding it more difficult to get sheet bars, and this situation obtains in northern Ohio among sheet producers. One Youngstown concern was fortunate enough to be able to take over the business of a company which for some reason was unable to fill its orders, and in this way the Valley sheet maker could obtain badly needed sheet bars to keep it going at permitted capacity. But in general only makers of Bessemer bars are even interested in the market. The largest Cleveland producer of Bessemer now is undertaking the task of educating makers of small bolts, etc., to the use of Bessemer stock since most of its open-hearth capacity now is devoted to supplying other local plants under Government direction. A sudden scarcity in small spikes for coal mine railroads has developed. It appears most makers of these spikes have abandoned their manufacture since the ruling price has been only $3.90 per 100 lb., with $1 extra for less than 200-keg lots; but even with full extras added for sizes, there has not been an attractive profit. It is suggested now by mine owners that the Washington Administration may be asked to suggest that some mills be directed to make such spikes to fill the heavy demand from the mines. The situation of wrought pipe for domestic use has not been settled and Cleveland jobbers are trying to get a decision from Washington on it. A leading local jobber just returned from Washington says he finds authorities there willing to accept the interpretation that such pipe intended for sanitary purposes in houses building for use of working men in congested manufacturing districts may be regarded as essential and stocks may be replaced with this understanding. A rather extraordinary demand for bar iron is developing here from exporting concerns. The strike of the bar mill hands of the A. M. Byers & Co. at Girard, Ohio, which was precipitated this morning, will cause embarrassment in filling large orders, it is feared. The men refused longer to await the decision of a federal labor conciliator and now say they will remain out until recognition of their union is made by the company.

Steel bars, 4.07c.; plates, 4.42c.; structural material, 4.17.; No. 10 blue annealed sheets, 5.42c.; No. 28 black sheets, 6.42c.; No. 28 galvanized sheets, 7.67c.

Buffalo

BUFFALO, Aug. 5.

Pig Iron.—Practically no 1919 business is now being taken on by furnaces, and all current orders entered on books are for Government work. From present indications the total of furnace output will not be sufficient to care for Government needs for some time to come. Good sized tonnages of Government allocations have been made with furnaces of the district during the week, principally for foundry and malleable for delivery over the remainder of the year. The less essential industries are receiving very scant shipments, even on orders which have been on furnace books for some time past, and further curtailment of such shipments may have to be made to supply the more urgent war essentials. The fixed schedule of prices is quoted as heretofore, f.o.b. furnace Buffalo:

No. 1 foundry, 2.75 to 3.25 silicon	$34.50
No. 2 X, 2.25 to 2.75 silicon	33.50
No. 3 foundry, 1.75 to 2.25 silicon	32.50
Gray forge	32.00
Malleable	33.50
Basic	32.00
Lake Superior charcoal, regular grades, f.o.b. Buffalo	37.50

Old Material.—The tenor of the scrap market remains about the same as reported last week, with about the same conditions as regards excess of demand over supply and the pronounced shortage of labor by which dealers are handicapped and embarrassed at yards. Such material as can be handled and classified is disposed of quickly, and there is a fairly good flow to consumers of such materials as do not have to go to yards for assorting and classification. The demand from open-hearth furnaces is of unusually large volume. Basic furnaces report that the regulation allowing electric furnaces to pay $34 for low phosphorus, while it restricts basic furnaces to $29 is handicapping them to some extent. There is no change in the schedule of prices, which are at the Government maximum. We quote as follows, per gross ton, f.o.b. Buffalo:

Heavy melting steel		$29.00
No. 1 low phosphorous, heavy, 0.04 and under		39.00
Low phosphorous, 0.04 and under		36.50
Low phosphorous, not guaranteed		34.00
No. 1 railroad wrought		34.00
No. 1 railroad and machinery cast		34.00
Iron axles	$44.00 to	46.00
Steel axles	44.00 to	46.00
Carwheels		29.00
Railroad malleable		34.00
Machine shop turnings	17.00 to	17.50
Heavy axle turnings		24.00
Clean cast borings	18.00 to	19.00
Iron rails	36.00 to	37.00
Locomotive grate bars	24.50 to	25.00
Stove plate	24.50 to	25.00
Wrought pipe	27.00 to	28.00
No. 1 busheling scrap	29.00 to	30.00
No. 2 busheling scrap	21.00 to	23.00
Bundled sheet stamping scrap	21.00 to	23.00

Finished Iron and Steel.—Aside from Government allocations, very little business is being booked, the amount of strictly commercial business transacted being almost nil. Practically all output in most lines and available stocks are being taken for Government requirements. The latest ruling of the War Industries Board makes the classification clearer and automatically separates each class of business so that shipment can be made without the confusion as to the different classifications that heretofore attended it in some instances. All tin plate that is now being shipped, or that will be shipped up to Sept. 1 is for military uses and the preservation of foodstuffs. Sales agencies report Canadian

business quiet with practically nothing being done in commercial lines. All materials for war purposes going into Canada are being handled through the Canadian War Trade Board and the Canadian War Mission at Washington, in conjunction with the American authorities. Considerable shipments of wire nails for Government uses and for export to France continue to go forward from one local mill under priority certificates, also barbed wire tonnages of considerable magnitude, largely for British use.

Birmingham

BIRMINGHAM, ALA., Aug. 5.

Pig Iron.—Furnace operators are obeying Government orders. This means that they are shipping on Government allocations almost exclusively, and very soon there bids fair to be no other business. During the week, allocations for 55,000 tons of additional basic for the English were received for distribution among the Alabama ironmasters. That distribution depends upon ability to produce. An eye is cast upon the furnaces of the Sheffield Coal & Iron Co., one of which is scheduled to start ironmaking from day to day. Others considered are the rehabilitated Talladega furnace, the Holt and others, but, as things now look, the Sloss-Sheffield and Woodward companies must take the lion's share with the Alabama Co. next. The leading interest needs all its basic, as does the Gulf States Steel Co., while Trussville is 100 per cent on foundry for the Emergency Fleet Corporation. Allocations of foundry grades are increasing. There is a growing scarcity of iron for the general foundry trade and the absolute necessity of getting it for war work. Southern foundries were late making a start in that direction, but they have been very busy recently on war work. Special effort is being made to have local plants adapt themselves to make a portion of the 1,500,000 steel helmet order which the Government is about to place. A conference of Alabama and Tennessee foundrymen will be held in Birmingham this week for the purpose of taking concerted action with regard to war work. The location by the Government of a district rate board for Alabama, Mississippi and Tennessee with headquarters in Birmingham will, it is believed, help this movement.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry and soft	$33.00
Basic	32.00

Cast-Iron Pipe.—Additional orders for Government and cantonment purposes were received by pipemakers during the week. One water-pipe plant is now 90 per cent on war work, making shells, etc. Soil pipe works are busy on Government work and will soon get a nice slice of business incident to the Government's housing plans.

Coal and Coke.—Alabama again broke her coal mining record during the week ending July 27, the output being 433,000 tons, compared with 379,000, the 1917 high record, and 415,000 and 412,000 respectively during the preceding two weeks of July. The work or fight order and personal appeals have established a real desire to dig coal, and it is being dug. This does not mean all that is needed, because the requirements of the district have increased greatly over the same period a year ago. By-product coking plants produce near the maximum, but beehive plants do not, owing to green labor. There is not near enough to go around and furnace practice is still under that of last year.

Old Material.—Collectors, knowing the Government maximum prices, ask more for their collections than dealers can afford to pay under the prices obtained from the Southern consumers. Pittsburgh and other far-off points have been knocking at the Birmingham scrap market, but, as heretofore stated, seem to be shut out on account of the freight rates. Unless the Government allows them higher prices, Birmingham dealers themselves admit that they do not see how business can be done with the far-off points on account of the freight differential, which is such a wide one as between Alabama and Eastern and Middle Western points. Country scrap-holders are more or less indifferent about assembling it, being more earnestly engaged in farm operations. The result is comparatively small yard holdings, yet there is an apparent stone wall against higher prices than Southern consumers pay on account of freight, which, for instance, to the largest steel consuming point in Alabama from Birmingham yards is 80c., compared with almost $6 to Pittsburgh.

Heavy melting steel has advanced 50c. and No. 1 railroad wrought has dropped $2 per ton. We quote per gross ton, f.o.b. Birmingham district yards, prices to consumers as follows:

Old steel axles	$35.00 to $36.00
Old steel rails	28.00 to 28.50
Heavy melting steel	25.50 to 26.50
No. 1 railroad wrought	28.00 to 30.00
No. 1 cast	27.50 to 28.50
Old carwheels	29.00 to 29.50
Tramcar wheels	26.00 to 26.50
Machine shop turnings	15.00 to 16.00
Cast iron borings	15.00 to 16.00
Stove plate	23.00 to 23.50

St. Louis

ST. LOUIS, Aug. 5.

Pig Iron.—While there has been continued allotment of pig iron for the first half of 1919 in a restricted way and chiefly to industries that are directly or indirectly engaged on war work, or vital necessities for domestic needs, there has been no marked loosening in the pig iron situation at this point and the needs of the consumers are still great. The heavy consumers of basic are generally engaged in war work and therefore are protected by the Government's priority action so far as military needs are concerned. The survey of the industries of the St. Louis industrial district is progressing and possibilities in the way of manufacture of war material are being steadily uncovered with consequently increasing allotments of work, which will serve to keep organizations intact and industries operating. There is, however, aside from the points noted, no marked change in the situation in this district as to pig iron from that which has obtained for the past year.

Coke.—Further allotments of coke to old customers for the first half of 1919 and in some cases for the full year have been made, but no new business has been accepted and the old customers have been advised that monthly quotas which are not delivered for one cause or another will fall with the month and the new month's quota have to stand on the original allotment. No allotments will be made up later. By-product plants producing either domestic or metallurgical coke are entirely sold up so far as this district is concerned.

Finished Iron and Steel.—Finished products continue in the same state which has prevailed for months, with the censorship on orders and purchases as rigid as ever and deliveries made only in the most necessary cases outside of war work, direct or indirect. Practically no new construction is reported because of the situation and not even re-enforced concrete buildings are being put up except those already provided for before the war restrictions were put in effect. Stock movement out of warehouse, even under the restrictions, is beyond the immediate capacity of the warehouses. For stock out of warehouse we quote as follows: Soft steel bars, 4.24c.; iron bars, 4.24c.; structural material, 4.34c.; tank plates, 4.59c.; No. 8 sheets, 5.54c.; No. 10 blue annealed sheets, 5.59c.; No. 28 black sheets cold rolled, one pass, 6.59c.; No. 28 galvanized sheets, black sheet gauge, 7.84c.

Old Material.—In the scrap market, dealers are still handicapped by the lack of material from railroad and other sources, and while the demand, if there were material available, would be good, the business remains unsatisfactory. The switching rate problem for the St. Louis industrial district remains unsettled and, in consequence, there is no disposition to enter

into any contracts even if there were material in sight to fill them. The consumers are in need of scrap of every character and all classes of material could be disposed of. This applies to rolling mill grades, steel plant material and foundry grades. Railroad lists are generally light because of inability to pick up or transport such material as is available. We quote dealers' prices, f.o.b. customers' works, St. Louis industrial district, as follows:

Per Gross Ton

Old iron rails	$37.00 to $37.50
Old steel rails, rerolling	33.50 to 34.00
Old steel rails, less than 3 ft.	31.00 to 31.50
Relaying rails, standard sections, subject to inspection	55.00 to 65.00
Old carwheels	28.50 to 29.00
No. 1 railroad heavy melting steel scrap	28.50 to 29.00
Heavy shoveling steel	27.00 to 27.50
Ordinary shoveling steel	26.50 to 27.00
Frogs, switches and guards, cut apart	28.50 to 29.00
Ordinary bundled sheet scrap	23.00 to 23.50
Heavy axle and tire turnings	20.50 to 21.00

Per Net Ton

Iron angle bars	$33.00 to $33.50
Steel angle bars	27.00 to 27.50
Iron car axles	40.00 to 40.50
Steel car axles	40.00 to 40.50
Wrought arch bars and transoms	40.00 to 40.50
No. 1 railroad wrought	28.50 to 29.00
No. 2 railroad wrought	27.50 to 28.00
Railroad springs	29.50 to 30.00
Steel couplers and knuckles	29.50 to 30.00
Locomotive tires, 42 in. and over, smooth inside	37.00 to 37.50
No. 1 dealers' forge	26.00 to 26.50
Cast iron borings	16.25 to 16.75
No. 1 busheling	25.50 to 26.00
No. 1 boilers, cut to sheets and rings	22.50 to 23.00
No. 1 railroad cast scrap	25.50 to 26.00
Stove plate and light cast scrap	21.50 to 22.00
Railroad malleable	26.00 to 26.50
Agricultural malleable	25.00 to 25.50
Pipes and flues	23.00 to 23.50
Heavy railroad sheet and tank scrap	22.50 to 23.00
Railroad grate bars	20.00 to 20.50
Machine shop trimmings	16.00 to 16.50
Country mixed scrap	19.50 to 20.00
Uncut railroad mixed scrap	23.50 to 24.00

British Steel Market

Hematite Pig Iron Active—Tin Plates Scarce and Advancing

(By Cable)

LONDON, ENGLAND, Aug. 7.

Pig iron is very firm. Prices for domestic delivery are officially unchanged, but the recent advance on export prices has had its effect. The demand is particularly active for hematite. The market for American semi-finished steel is only nominal. It is difficult to buy tin plates, and the basis is 33s. 10½d., as against 33s. 7½d. last week. We quote as follows:

Tin plate, coke, 14 x 20; 112 sheets, 108 lb., f.o.b. Wales, 33s. 10½d.

Ferromanganese, $260 to $270, c.i.f. for export to America, £26 10s. for British consumption.

Ferrosilicon, 50 per cent, c.i.f., £35 upward.

On other products control prices per gross ton are:

Hematite pig iron, East Coast, £6 2s. 6d.; West Coast, £6 7s. 6d.

Cleveland pig iron (export), £5 5s. for No. 1 and £6 6s. for basic. Domestic prices, 6s. below these figures.

Steel plates, ship, bridge and tank, £11 10s. to £17, according to size.

S. M. boiler plates, basis, £12 10s.

Bar iron, standard quality, basis £13 17s. 6d.; marked, £16.

Sheet and tin plate bars, £10 7s. 6d.

Blooms and billets for rerolling (ordinary), £10 7s. 6d.; special quality, £11.

Wire rods, £21 10s. net, basis.

Germany and Sheffield Industries After the War —Electric Pig Iron in Italy

LONDON, ENGLAND, July 16.—The market has become affected by successive advances in the price of coal to the extent of 4s per ton, and it is confidently expected that this will involve a revision of the official price of coke as well as pig iron. An advance in Cleveland foundry and basic irons seems imminent. The strain on capacity is more insistent than ever, and labor conditions are very difficult. The influenza epidemic has temporarily hindered the progress of output.

The outlet for pig iron continues heavy, but deliveries leave something to be desired owing to lack of labor, while Midland consumers still find considerable difficulty in covering their needs owing to inadequate offers. The position of Cleveland No. 3 is a little easier owing to the temporary suspension of deliveries to Scotch consumers because of the holiday period. The outgoings are almost entirely confined to Class A work, so that buyers for less urgent use find great difficulty in placing orders. Shipments to Allies have fallen off for the moment. While the output of foundry grades is barely maintained, that of forge iron continues in excess of the demand. Hematite is wanted as much as ever, but deliveries are going forward as well as could be expected, with good quantities going to France, although Italian business is temporarily held up pending new arrangements, possibly for getting orders through direct, as apprehended by merchants.

British Iron and Steel Home Trade Maximum Rates

Pig Iron

	£	s	d
Hematite, East Coast mixed numbers	6	2	6
Hematite, West Coast mixed numbers	6	7	6
Cleveland—No. 1	4	19	0
Cleveland—other grades	4	15	0
Cleveland—basic	6	0	0
Scottish foundry and forge—Nos. 3, 4 and lower grades of Monkland, Dalmellington, Eglinton and Govan	5	14	0
Nos. 3, 4 and lower grades of all other brands	5	15	6

Steel

Ship, bridge and tank plates, ¼-in. (basis)	11	10	0
Ship, bridge and tank plates under ¼-in. down to and including 3/16-in.	14	10	0
Ship, bridge and tank plates under 3/16-in. down to and including ⅛-in.	16	0	0
Ship, bridge and tank plates under ⅛-in. down to and including 3/32-in.	17	0	0
S. M. boiler plates (basis)	12	10	0
Angles and bulbs	11	2	6
Rounds, squares and hexagons:			
Bars, 3-in. to 5½-in. (without tests)	12	10	0
Bars, 3-in. to 5½-in. (with tests)	13	0	0
Small rounds, squares and hexagons (without tests)	15 0 0 to	15	10 0
Joists	11	2	6
Rails, 60 lb. per yard and over	10	17	6
Sheet and tin plate bars	10	7	6
Blooms and billets for rerolling (ordinary)	10	7	6
Blooms and billets for rerolling (special)	11	0	0
Wire rods	21	10	0

Bar Iron

Standard quality, ordinary sizes (basis)	13	17	6
Marked bars (basis)	16	0	0

All prices net f.o.b. makers' works.

Tool Steel (Delivered Buyers' Works)

High speed bars 14 per cent tungsten.....3/8 per lb. d/d.
High speed bars 18 per cent tungsten.....4/5 per lb. d/d.

Semi-finished steel is unsettled because of the proposal to prohibit the sale by makers to merchants except under a permit. A closer control is intended, in order to guard against material being placed in stock. Current output continues to be largely absorbed for war work. It is understood that the basis price of wire rods, taken recently under control, has been fixed at £21 10s., net.

The further tightening up in the tin-plate market has been inevitably brought about by the fact that makers are already well sold up three months ahead, apart from the more difficult conditions in labor, and especially tin, which has caused inquiries to be made by the Tinplate Works Association from the Director of Tin Supplies in regard to the difficulty experienced by makers in securing tin. Owing to the limited offers, business is restricted, and practically nothing is obtainable at below the full maximum basis now standing at 33s 1½d for cokes, 20 x 14, net, at works. Big orders are again expected for France. Inquiries for oil plates are more important, but few makers seem inclined to take orders just yet, even on full terms.

Business in ferromanganese for export is restricted, and the market is featureless, while easier terms have been accepted lately for North American Atlantic ports at between $250 and $260 c.i.f. Canada is still inquiring, but the demand from the United States is in abeyance. F.o.b. terms to continental ports stand at £55 to £60.

There is much anxiety in Sheffield among the big steel firms. In pre-war days 50 per cent of this output was of peaceful character, but today not more than 5 per cent falls within the category, and they fear that after the war they will find the utmost difficulty in regaining lost markets. Many of their former customers are now able to supply their needs by themselves in high speed steel, for instance, while the merchant trade of the country has simply been disrupted by the policy of the Government in eliminating merchant business, upon which most works depended for a large proportion of their rolling programs. Germany was, moreover, an excellent customer of the Sheffield industries, and if the military war is to be followed by a boycott of the Central powers further difficulties will be put in the way of British trade recuperation. In discussing the matter, one authority remarks that the long-headed business men, much as they abhor Germany's crimes, take a very broad view of international trade relations when peace is restored, and will not indorse a policy of German industrial and commercial elimination, even for a period of years.

The Ansaldo Co., Genoa, Italy, is to have an electrical iron ore reduction plant installed by Electro-Metals, Ltd., of London. There will be six units each of 4000 hp., and capable of treating 150,000 tons of ore a year.

New York

NEW YORK, Aug. 6.

Pig Iron.—Recent developments indicate that the policy of the Government is to limit transactions in pig iron to the present year. In addition to the intimation from one high official at Washington that the selling of pig iron for delivery after Jan. 1 would not be in harmony with the wishes of the Government, Director Replogle is writing foundries which are seeking to buy for next year's delivery that he is not in a position to instruct furnaces to take orders for that delivery. Owing in part to the reluctance of sellers to take orders for next year and in part to the attitude of Government officials, selling for that delivery has stopped. Deliveries of Northern iron are going forward in a fairly satisfactory manner, but in the South there is a scarcity of cars, due to the demand for cars to move the cotton crop. Some furnace companies are complaining in regard to some features of the policy of the Government as to its allocations, but for the most part all unpleasant features are being accepted cheerfully as a duty in helping to win the war. We quote prices as follows on tidewater delivery on Northern and Southern grades:

No. 1 X	$35.40
No. 2 X	34.00
No. 2 plain	33.90
No. 2 X Virginia	37.90
No. 1 Southern (all rail)	42.20
No. 2 Southern (all rail)	40.70

Ferroalloys.—While it cannot be said that there is a real buying movement in ferromanganese for delivery in 1919, sales have been made in lots of 250 tons, deliveries in some cases running to July 1 next year. Some inquiries are pending, representing lots up to 500 tons. There is no general buying as yet, however, for delivery beyond this year. Consumers for some time have limited their calculations to 1918 and do not get out of that habit. The permits granted some months ago for the bringing in of 12,000 tons of British ferromanganese have been acted on to a large extent. The question of further permits has not been taken up. Available supplies of manganese ores increase gradually. An occasional lot of Indian ore still reaches New York. The embargo now in force applies to ore loaded after July 20. An effort is being made to have this restriction relaxed. We quote ferromanganese at $250 delivered for 70 per cent, with $4 more for each additional unit of manganese. Spiegeleisen is still quoted at $75 at furnace for 16 per cent plus $3.50 per additional unit. On contract ferrosilicon the quotation continues at $150 per ton delivered but very little is being done.

Cast-Iron Pipe.—Cast-iron pipe shops are finding it difficult to get enough pig iron to keep in operation. One company which has been able to operate to only 50 per cent and is delivering 80 per cent of its output to the Government, reports that it is working on a hand to mouth basis as far as pig iron is concerned. Promises of Government officials to obtain prompter deliveries of pig iron do not have the desired results. Government prices, including the new freight rates, are as follows: $61.75, New York, for 6-in. and heavier; and $64.75 for 4-in.; $71.75 for 3-in., with $1 additional for class A and gas pipe.

Old Material.—Sellers of scrap who fear that their organizations will be seriously disrupted by the draft, especially under the proposed new law making the draft age from 18 to 45, are appealing to steel companies to certify that the scrap business is essential for their operation in making war materials and many letters are being obtained. The labor situation is increasingly important. The demand for all kinds of scrap, except low phosphorus, is active and prices of stove plate and grate bars have advanced from $2 to $3. Machine shop turnings and borings have advanced about $1. We quote prices of brokers to New York producers and dealers, per gross ton, New York, as follows:

Heavy melting steel	$26.20
Rerolling rails	30.80
Relaying rails	$60.00 to 70.00
Iron and steel car axles	43.70
No. 1 railroad wrought	30.80
No. 1 railroad wrought, cut to not less than 10 in. or over 24 in.	35.80
Wrought-iron track scrap	28.80
Forge fire	23.50 to 24.00
No. 1 yard wrought long	29.80
Light iron	10.00 to 11.00
Cast borings (clean)	16.25 to 16.50
Machine shop turnings	16.25 to 16.50
Mixed borings and turnings	16.25 to 16.50
Iron and steel pipe (1 in. minimum diameter), not under 2 ft. long	29.30 to 30.80
Stove plate	26.00
Locomotive grate bars	26.00
Malleable cast (railroad)	30.50 to 31.00
Old carwheels	25.80

Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton, are:

No. 1 machinery cast	$34.00
No. 1 heavy cast (columns, building materials, etc.), cupola size	34.00
No. 1 heavy cast, not cupola size	29.00
No. 1 cast (radiators, cast boilers, etc.)	$27.00 to 28.00

Finished Iron and Steel.—The American Bridge Co. has been ordered to proceed with the fabrication of the first buildings for the Neville Island gun plant, involving 20,000 tons of steel. How much the total structural steel requirements will be is not yet ascertained but it is not unlikely that construction will be spread over three years. For air nitrate plants at Cincinnati and Toledo 20,000 tons of steel building work will be needed, but the work has not yet been placed owing to the early deliveries demanded. Other Government work includes 1900 tons for storage sheds for the Department of Yards and Docks, United States Navy, at Norfolk, and 1000 tons for storage buildings at South Brooklyn, this work placed by Snare & Triest Co. with the Hay Foundry & Iron Works. For the Sheldon Spring & Axle Co., Wilkes-Barre, 500 tons has been awarded to the Guerber Engineering Co. Lewis F. Shoemaker & Co. will erect two bridges for the Philadelphia & Reading, totaling 160 tons, and the Phoenix Bridge Co. has taken 500 tons of work for the Boston & Albany at Westfield. The distribution of the 10,000 cars for the American Expeditionary Forces is as follows: American Car & Foundry Co., 2400; Standard Car Co., 1900; Haskell & Barker Car Co., 1800; Pressed Steel Car Co., 1500; Pullman Co., 1500; Standard Car Construction Co., 400 tank cars; Liberty Car Co., 250; St. Louis Car Co., 250. For France 44,000 tons of shell billets measuring 145 mm. on the diagonal are wanted, mostly in the first quarter of next year, with about one-quarter of the total in December. The Japanese government is desirous of getting 33,000 steel tires and a large lot of axles, but it is expected that arrangements will have to be made at Washington and the usual release effected before the mills will entertain the business. A meeting called last week in New York to discuss the export situation does not appear to have met with a response

on the part of all of the steel export houses. Those interviewed, though listed as having been represented, were not present and take the view that Government agencies will release steel for export whenever possible, thus to maintain our international business relations, and that it is unnecessary to harass the Government with the resolutions of special associations in view of the war demand for steel. Among those companies which are emphatic in stating that they had nothing to do with the meeting are the American International Corporation and the American Steel Export Co. We quote mill shipments as follows: Steel bars, 3.145c.; shapes, 3.245c.; plates, 3.495c., and bar iron, 3.745c., all New York. Out-of-store prices are 1c. higher.

Cincinnati

CINCINNATI, Aug. 6—(*By Wire.*)

Pig Iron.—Reports from different sources indicate that the rumor extant last week that first half contracts were being discouraged now appears to have been well founded, but so far no official information on the subject has been received by any of the furnace representatives. Some contracting has been done for first half shipment, but the indifferent attitude of buyers is due to the fact that they know they will be taken care of in all work that is considered essential. One large producer of foundry iron in the South has notified its representative to advise its customers that if engaged in war work, they need not be worried about the future, provided the metal can be produced. The shortages of basic is emphasized in the closing down of four sheet mills in a nearby rolling mill so that steel ingots may be diverted into the making of products more urgently needed. This action was taken at the direction of War Industries Board and shows that the lines are tightening. The distribution of foundry iron is still being left to the furnaces and their selling agencies, although it is admitted that general suggestions are issued from Washington that are acted upon as direct orders. There is a heavy demand for high silicon iron, but none is to be had in southern Ohio or in the South. It is generally believed that the makers of Ohio silvery iron have their books fairly well filled for at least the first quarter of next year.

Based on freight rates of $3.60 from Birmingham and $1.50 from Ironton, we quote f.o.b. Cincinnati:

Southern coke, No. 2 foundry and No. 2 soft	$36.60
Southern Ohio, No. 2	34.50
Basic, Northern	33.50

Coke.—The amount of future business in foundry coke has not been at all up to expectations. While a number of contracts are being made consumers of coke who are engaged 100 per cent on Government work are not at all apprenhensive as to the future. Consumers not engaged in strictly essential work have become more anxious to provide for the future, but some producers are not willing to take on business from anyone except those who may not be able to get the sanction of the Fuel Administrator to forward shipments when due. The furnace operators are not accumulating any stocks, except in a few cases where the furnaces are shut down for repairs, but as shipments are coming along satisfactorily, they are not alarmed as to the future. It is generally understood that furnace needs are paramount and that everything will be done to keep them supplied with fuel. It is rumored that the present hot spell is reducing production only slightly in all of the different fields although even by-product plants are affected almost as much as the beehive ovens. However, as the supply of labor is better and the morale also improving, selling agencies do not look for any very pessimistic reports.

Finished Material.—Iron bars represent about the only finished commodity for which mill representatives can book orders. Even these orders are scrutinized closely lest some of the material get into the hands of non-essential industries. The jobbers have been afforded only slight relief but have promises that shipments will be improved during the present month, as information has been received from Washington to this effect. It appears that the spontaneous and concerted action of the jobbers to distribute their stocks where most needed has had some effect. Certainly none in this vicinity can be accused of lack of vigilance in this respect. High-speed steel representatives are booking a number of orders from plants engaged in the manufacture of ordnance and of machine tools. Lately there does not seem to be any inclination on the part of leading makers to cut the Government's price of $2 per lb. The wire nail and barbed wire situation is unchanged and local stocks are very low.

The following are local jobbers' prices: Steel bars and small structural shapes, 4.13c. base; large rounds and squares 2 in. and over, 4.23c. base; plates, 4.48c. base; No. 10 blue annealed sheets, 5.48c.; steel bands, 3/16 in. and lighter, 4.98c. base (using the new band list). Reinforcing concrete bars, 4.23c., and wire nails, $4.25 to $4.50 per keg base.

Old Material.—The increasing demand for scrap and the shortage of practically all kinds have tended to stiffen prices to a considerable extent. No. 1 machinery cast is much firmer. No. 1 railroad wrought also comes in for a small advance. Old car wheels are also stronger. All kinds of scrap used by the rolling mills is almost unobtainable, except in cases where evidence is produced that the scrap is for steel-making purposes. The following are dealers' prices f.o.b. at yards in carload lots:

	Per Gross Ton
Bundled sheet scrap	$21.50 to $22.00
Old iron rails	33.50 to 34.00
Relaying rails, 50 lb. and up	44.50 to 45.00
Rerolling steel rails	32.00 to 32.50
Heavy melting steel scrap	27.50 to 28.00
Steel rails for melting	27.50 to 28.00
Old carwheels	29.00 to 29.50
	Per Net Ton
No. 1 railroad wrought	29.50 to $30.00
Cast borings	14.00 to 14.50
Steel turnings	14.50 to 15.00
Railroad cast	25.00 to 25.50
No. 1 machinery	29.00 to 29.50
Burnt scrap	17.50 to 18.00
Iron axles	40.00 to 40.50
Locomotive tires (smooth inside)	35.50 to 36.00
Pipes and flues	21.00 to 21.50
Malleable cast	24.50 to 25.00
Railroad tank and sheet	18.50 to 19.00

Electric Furnace Industries Organize

At the request of the electrical manufacturing industry's general war service committee, manufacturers of electric furnaces have organized the Electric Furnace Industries War Service Committee, the members being as follows:

Hamilton & Hansell Co., New York.
John A. Crowley Co., New York.
Ajax Metal Co., Philadelphia.
American Metallurgical Corporation, Philadelphia.
Electric Furnace Construction Co., Philadelphia.
Pittsburgh Furnace Co., Pittsburgh.
Booth-Hall Furnace Co., Chicago.
Industrial Electric Furnace Co., Chicago.
C. W. Leavitt & Co., New York City.
Ludlum Electric Furnace Co., New York.
T. W. Price Engineering Co., New York.
Beckman & Linden Corporation, San Francisco.

A number of other electric furnace companies have signified their intention of joining this organization, but as yet have not been enrolled.

The object of the Electric Furnace Industries War Service Committee is the formation of an organization for the duration of the war, or for such a length of time as it is apparent that there is a necessity for it to compile and detail information pertaining to the electric furnace industries in connection with steel, non-ferrous alloys and metals in general where the melting problem is concerned.

The Niagara Radiator & Boiler Co., North Tonawanda, N. Y., last week forwarded a large consignment of hot water radiators to Japan. The shipment was made by the New York State barge canal, to go via the Panama Canal from New York, the consignment to make the entire trip from North Tonawanda to Japan by water.

IRON AND INDUSTRIAL STOCKS

Wall Street Not Alarmed by Action in Harvester Company's Case

NEW YORK, Aug. 7.

Cheering news from the Western battle front last week had very little effect on Wall Street, and stocks fluctuated only slightly, the trend being uncertain. The problems of taxation are receiving more attention and scarcity of money is also undoubtedly a factor in limiting transactions in stocks. The most interesting developments in the market Monday of this week was the advance of 4⅞ points in the stock of the International Harvester of New Jersey and ¼ point in stock of the International Harvester Corporation, the latter company doing the foreign business. These two concerns are to be consolidated and evidently Wall Street believes that the dissolution is not a very dangerous proceeding. If any one experienced any anxiety as to the effect of the Harvester decision on the United States Steel Corporation, it was not evident on the Stock Exchange, for Steel common advanced 1⅝ points and the preferred declined only ⅛ point. Likewise the decision of the labor controversy against the Bethlehem Steel Co. did not have a depressing effect. Bethlehem Steel advanced ⅛ point and Bethlehem Steel B, 1½ points. Changes Tuesday of this week were unimportant. The range of prices on active iron and industrial stocks from Tuesday of last week to Wednesday of this week was as follows:

Allis-Chalm. com.	33½-34¼	Int. Har. of N. J. pf.	111½
Allis-Chalmers pf.	82¾-83¼	Int. Har. C. com	65 - 66½
Am. Can com...	46⅝-47⅜	Lack. Steel	82 - 84
Am. Can pf.....	94⅝	Lake Sup. Corp.	19 - 20⅛
Am. C. & F. com.	83¾-84½	Lima Loco.	45¾
Am. C. & F. pf.....	109¾	Midvale Steel ..	51⅝-52½
Am. Loco. com..	65½-66⅝	Net-Acme	30 - 31
Am. Loco. pf.....	98¾	Nat. E. & S. com	51⅛-52⅞
Am. Ship. com..	124 -125	N. Y. Air Brake.....	128
Am. Ship. pf.....	90	Nova Scotia Stl.	62 - 70
Am. Stl. Fdries.	72¼-74¾	Press. Stl. com..	69½-70⅞
Bald. Loco. com.	88⅝-93	Press. Stl. pf.....	100
Beth. Steel com.	84⅜-84½	Ry. Stl. Spg com	60⅞-61¾
Beth. Steel cl. B.	82¼-84⅞	Republic com. ..	91 - 92⅞
Case (J. I.) pf.....	85½	Republic pf	101
Chic. Pneu. Tool.....	68½	Superior Steel .	39½-41⅛
Colo. Fuel	45 - 46¾	Sup. Stl. 1st pf.....	94
Cruc. Steel com..	65¼-67⅝	U. S. Pipe com.....	14½
Deere & Co. pf.....	94	U. S. Steel com.	107⅜-110
Gen. Elec.	144½-145½	U. S. Steel pf...	109¾-112½
Gt. No. Ore Cert	31¼-31¾	Va. I. C. & Coke.....	72
Gulf States Steel	81½-83½	Westghse Elec. .	41½-42
Int. Har. of N. J. com.	124½-130		

Dividends

The American Radiator Co., quarterly, 3 per cent on the common, payable Sept. 30, and 1¾ per cent on the preferred, payable Aug. 15.

The Eastern Steel Co., quarterly, 2½ per cent on the common, payable Oct. 16, and 1¾ per cent on the first and second preferred, payable Sept. 16.

The Harbison-Walker Refractories Co., quarterly, 1½ per cent on the common, payable Sept. 2, and 1½ per cent on the preferred, payable Oct. 19.

The Inland Steel Co., quarterly, 2 per cent, payable Sept. 2.

The International Harvester Corporation, quarterly, 1¾ per cent on the preferred, payable Sept. 2.

The International Harvester Corporation of New Jersey, quarterly, 1¾ per cent, payable Sept. 2.

The National-Acme Co., quarterly, ¾ per cent, payable Aug. 31.

The Ontario Steel Products Co., quarterly, 1¾ per cent on the preferred and 1¼ per cent on account of accumulated dividends, payable Aug. 15.

The Pittsburgh Steel Co., quarterly, 1¾ per cent on the preferred, payable Sept. 1.

The Savage Arms Corporation, quarterly, 1½ per cent on the common, 1¾ per cent on the first preferred and 1½ per cent on the second preferred, all payable Sept. 15.

The Standard Sanitary Mfg. Co., quarterly, 1½ per cent on the common and 1¾ per cent on the preferred, payable Aug. 10.

Industrial Finances

The M. J. Ford Mfg. Co., Inc., 398 Grand Street, Jersey City, N. J., has filed schedules in bankruptcy, showing assets consisting of machinery and tools at its local plant of $5,549, and liabilities of $6,414.

Net earnings of the American Steel Foundries in the six months ended June 30 last amounted to $4,187,455, compared with $3,948,197 in the corresponding period of 1917. The surplus available for dividends was $2,986,924, equivalent to $17.27 a share earned on the $17,184,000 capital stock for the six-month period, compared with $21.44 a year ago. The company reserved $1,043,000 on the basis of the present law to cover income and excess profits taxes.

Bibliography of Physical Properties and Tests of Coke

In discussing blast-furnace coke in the IRON AGE, July 25, G. D. Cochrane offered the bibliography which follows:

O. Simmersbach: "Tests of Coke." *Glückauf*, 1913, vol. xlix. pp. 315-323.

O. Simmersbach: "Tests of Hardness of Coke." *Stahl und Eisen*, 1913, vol xxxiii. pp. 512-520.

O. Simmersbach: "Chemistry of the Coking Process" *Stahl und Eisen*, 1914, vol xxxiv. pp. 108-110.

A. Wagner: "Sampling and Testing of Coke." *Ferrum*, 1913, vol. x. pp. 321-336, 353-369.

J. R. Campbell: "Manufacture and Character of Basic Coke." *Coal Age; Iron and Coal Trades Review*, 1914, vol. lxxxviii. pp. 346-347.

G. Charpy and N. Godchot: "Influence of Coking Temperature on Crushing Strength of Coke." *Comptes Rendus; Iron and Coal Trades Review*, September, 1917, vol. xcv. p. 282.

G. W. Hewson: "Coke as Fuel for the Blast Furnace." *Journal of the Society of Chemical Industry*, Feb. 28, 1918, vol. xxxvii. pp. 60-63T.

Sir Lowthian Bell: "Principles of the Manufacture of Iron and Steel." London, 1884.

R. Forsythe: "The Blast Furnace and Manufacture of Pig Iron." New York, 1908.

T. Turner: "Metallurgy of Iron." 4th ed. London, 1915.

Blast-Furnace Slag in Concrete

The satisfactory service of concrete made with blast-furnace slag is shown by tests made at the University of Cincinnati, says the *Engineering News-Record*. The results follow: Compression tests show slag and bank sand as used in 1:2:4 concrete to be 17 per cent stronger than concrete made with pebbles and bank sand. Concrete made with slag and bank sand shows greater elasticity and resistance to fracture than pebble concrete. Weight of slag and bank sand concrete is 16 per cent less than pebble concrete for a 1:2:4 mixture. Tensile strength of 1:3 slag mortar is 12.5 per cent higher than bank sand mortar and 62 per cent higher than standard Ottawa sand mortar. Bond strength of slag and bank sand concrete is 15 per cent higher than 1:2:4 pebble concrete. Slag and bank sand concrete withstands higher temperature than crushed stone and bank sand concrete. Transverse beam tests comparing strength of slag and bank sand beams with crushed stone (1:2:4 mixture) show slag beams to be 42 per cent stronger. Slag concrete withstands action of acids better than do crushed stone samples. No appreciable corrosion of steel embedded in slag concrete is noted at the end of one year. Slag concrete resists shock and impact much more successfully than pebble or crushed stone concrete.

New Record in Lake Ore Shipments

June made a record in iron shipments in the Lake Superior region for that month when 9,921,860 gross tons was moved, and July has also made a record, the movement being 10,659,203 tons, compared with 10,241,633 tons in July, 1917. The movement to Aug. 1 is also a record, being 29,608,933 tons, compared with 29,265,724 tons to Aug. 1, 1916, and 26,376,768 tons to Aug. 1, 1917. The comparative shipments by ports for July and for the season to Aug. 1 follow:

Port	July, 1917	July, 1918	To Aug. 1, 1917	To Aug. 1, 1918
Escanaba	932,274	1,109,511	3,137,571	2,842,877
Marquette	643,887	630,341	1,269,636	1,684,019
Ashland	1,238,326	1,337,047	3,147,794	3,373,115
Superior	2,231,502	2,352,679	5,757,584	7,051,244
Duluth	3,543,873	3,636,948	8,672,767	9,913,087
Two Harbors...	1,651,771	1,592,677	4,391,416	4,744,581
Total	10,241,633	10,659,203	26,376,768	29,608,933
Increase, 1918		417,570	.....	3,232,165

Prices Finished Iron and Steel, f.o.b. Pittsburgh

An advance in freight rates of 25 per cent from Pittsburgh on finished iron and steel products, including wrought iron and steel pipe, went into effect June 25, 1918. The rates from Pittsburgh, in carloads, to points named, per 100 lb. are as follows: New York, 245c.; Philadelphia, 23c.; Boston, 27c.; Buffalo, 17c.; Cleveland, 17c.; Cincinnati, 23c.; Indianapolis, 25c.; Chicago, 27c.; St. Louis, 34c.; Kansas City, 59c.; St. Paul, 49½c.; Denver, 99c.; Omaha, 59c.; minimum carload, 36,000 lb. to four last named points; New Orleans, 285c.; Birmingham, 57.5c.; Pacific Coast, $1.25; minimum carload, 80,000 lb. To the Pacific Coast the rate on steel bars and structural steel is $1.315, minimum carload 40,000 lb.; and $1.25, minimum carload 50,000 lb. On wrought iron and steel pipe the rate from Pittsburgh to Kansas City is 50c. per 100 lb., minimum carload 46,000 lb.; to Omaha, 50c., minimum carload 46,000 lb.; to St. Paul and Minneapolis, 49.5c., minimum carload 46,000 lb.; Denver, 99c., minimum carload 46,000 lb. A 3 per cent transportation tax applies. On iron and steel items not noted above, rates vary somewhat and are given in detail in the regular railroad tariffs.

Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in. angles, 3 to 6 in. on one or both legs, ¼ in. thick and over, and zees, structural sizes, 5c.

Wire Products

Wire nails, $3.50 base per keg; galvanized, 1 in. and longer, including large-head barb roofing nails taking an advance over this price of $2, and shorter than 1 in., $2.50. Bright basic wire, $3.35 per 100 lb.; annealed fence wire, Nos. 6 to 9, $3.25; galvanized wire, $3.95; galvanized barb wire and fence staples, $4.35; painted barb wire, $3.65; polished fence staples, $3.65; cement-coated nails, $3.40 base; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 47 per cent off list for carload lots, 46 per cent for 1000-rod lots, and 45 per cent off for small lots, f.o.b. Pittsburgh.

Bolts, Nuts and Rivets

Large structural and ship rivets.....$4.40 base
Large boiler rivets.....$4.50
7/16 in x 6 in smaller and shorter rivets..50-10 per cent off list
Machine bolts h.p. nuts, ⅜ in. x 4 in.:
Smaller and shorter, rolled threads....50-10-5 per cent off list
Cut threads.....50-5 per cent off list
Larger and longer sizes.....40-10 per cent off list
Machine bolts, c.p.c. and t. nuts, ⅜ in. x 4 in.:
Smaller and shorter.....40-10 per cent off list
Larger and longer.....35-5 per cent off list
Carriage bolts, ⅜ x 6 in.:
Smaller and shorter, rolled threads.....50-5 per cent off list
Cut threads.....40-10-5 per cent off list
Larger and longer sizes.....40 per cent off list
Lag bolts.....50-10 per cent off list
Plow bolts, Nos. 1, 2, 3.....50 per cent off list
Hot pressed nuts, sq., blank.....2.50c. per lb. off list
Hot pressed nuts, hex., blank.....2.30c. per lb. off list
Hot pressed nuts, sq., tapped.....2.30c. per lb. off list
Hot pressed nuts, hex. tapped.....2.10c. per lb. off list
Cold punched sq. and hex. nuts, blank.....2.25c. per lb off list
Cold punched sq. and hex. nuts, tapped....2.00c. per lb off list
Semi-finished hex. nuts:
⅜ in. and larger.....60-10-10 per cent off list
7/16 in. and smaller.....70-5 per cent off list
Stove bolts.....70-10 per cent off list
Stove bolts.....2½ per cent extra for bulk
Tire bolts.....50-10-5 per cent off list

The above discounts are from present lists now in effect. All prices carry standard extras.

Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, $57; chain rods, $65; screw, rivet and bolt rods and other rods of that character, $65. Prices on high carbon rods are irregular. They range from $70 to $80, depending on carbon.

Railroad Spikes and Track Bolts

Railroad spikes, 9/16 in. x 4½ in. and heavier, per 100 lb., $3.25; in lots of 200 kegs of 200 lb. each or more; track bolts $4.50. Boat spikes, $5.25 per 100 lb., f.o.b. Pittsburgh.

Terne Plate

Effective May 24 prices on all sizes of terne plates are as follows: 8-lb. coating, 200 lb., $15 per package; 8-lb. coating, I. C., 112 sheets, $17.50; 12-lb. coating, I. C., $17.00; 15-lb. coating, I. C., $18.00; 20-lb. coating, I. C., $19.00; 25-lb. coating, I. C., $20.00; 30-lb. coating, I. C., $21.75; 35-lb. coating, I. C., $22.75; 40-lb. coating, I. C., $24.00 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

Iron and Steel Bars

Steel bars at 2.90c. from mill, and 4.50c. to 5c. from warehouse in small lots for prompt shipment. Refined iron bars, 3.50c. in carload and larger lots, f.o.b. mill.

Wrought Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card, as announced Nov. 5 by the Government on steel pipe, those on iron pipe being the same as quoted for some time:

Butt Weld

Steel: Inches	Black	Galv.	Iron: Inches	Black	Galv.
⅛, ¼ and ⅜	44	17½	⅛ and ¼	23	+4
½	48	33½	⅜	24	+3
¾ to 3	51	37½	½	28	10
			¾ to 1½	33	17

Lap Weld

2	44	31½	1¼	18	3
2½ to 6	47	34½	1½	25	11
7 to 12	44	30½	2	26	12
13 and 14	34½	..	2½ to 6	28	15
15	32	..	7 to 12	25	12

Butt Weld, extra strong, plain ends

⅛, ¼ and ⅜	40	22½	⅛, ¼ and ⅜	22	5
½	45	32½	½	27	14
¾ to 1½	49	36½	¾ to 1½	33	18
2 to 3	50	37½			

Lap Weld, extra strong, plain ends

2	42	30½	1¼	19	4
2½ to 4	45	33½	1½	25	11
4½ to 6	44	32½	2	27	14
7 to 8	40	26½	2½ to 4	29	17
9 to 12	35	21½	4½ to 6	28	16
			7 to 8	20	8
			9 to 12	15	3

To the large jobbing trade an additional 5 per cent is allowed over the above discounts, which are subject to the usual variations in weight of 5 per cent. Prices for less than carloads are four (4) points lower basing (higher price) than the above discounts on black and 5½ points on galvanized.

On butt and lap weld sizes of black iron pipe, discounts for less than carload lots to jobbers are seven (7) points lower (higher price) than carload lots, and on butt and lap weld galvanized iron pipe are nine (9) points lower (higher price).

Boiler Tubes

The following are the prices for carload lots, f.o.b. Pittsburgh, announced Nov. 13, as agreed upon by manufacturers and the Government:

Lap Welded Steel		*Charcoal Iron*	
3½ to 4½ in.	34	3½ to 4½ in.	12½
2½ to 3¼ in.	24	3 to 3⅜ in.	+ 5
2¼ in.	17½	2½ to 2⅞ in.	+ 7½
1¾ to 2 in.	13	2 to 2¼ in.	+ 22½
		1¾ to 1⅞ in.	+35

Standard Commercial Seamless—Cold Drawn or Hot Rolled

Per Net Ton		Per Net Ton	
1 in.	$340	1¾ in.	$220
1¼ in.	280	2 to 2½ in.	190
1⅜ in.	270	2¾ to 3¾ in.	180
1½ in.	220	4 in.	200
		4½ to 5 in.	220

These prices do not apply to special specifications for locomotive tubes nor to special specifications for tubes for the Navy Department, which will be subject to special negotiation.

Sheets

Makers' price for mill shipments on sheets of United States standard gage in carload and larger lots, are as follows:

Blue Annealed—Bessemer	Cents per lb.
No. 8 and heavier	4.20
Nos. 9 and 10	4.25
Nos. 11 and 12	4.30
Nos. 13 and 14	4.35
Nos. 15 and 16	4.45
Box Annealed, One Pass Cold Rolled—Bessemer	
Nos. 17 to 21	4.80
Nos. 22 and 24	4.85
Nos. 25 and 26	4.90
No. 27	4.95
No. 28	5.00
No. 29	5.10
No. 30	5.20
Galvanized Black Sheet Gage—Bessemer	
Nos. 10 and 11	5.25
Nos. 12 and 14	5.35
Nos. 15 and 16	5.50
Nos. 17 to 21	5.65
Nos. 22 and 24	5.80
Nos. 25 and 26	5.95
No. 27	6.10
No. 28	6.25
No. 29	6.50
No. 30	6.75
Tin-Mill Black Plate—Bessemer	
Nos. 15 and 16	4.80
Nos. 17 to 21	4.85
Nos. 22 to 24	4.90
Nos. 25 and 27	4.95
No. 28	5.00
No. 29	5.05
No. 30	5.05
Nos. 20½ and 21	5.10

Metal Markets

The Week's Prices

Cents Per Pound for Early Delivery

	Copper, New York		Tin,	Lead		Spelter	
		Electro-	New	New	St.	New	St.
July	Lake	lytic	York	York	Louis	York	Louis
31	26.00	26.00	*94.00	8.05	7.75	8.25	8.00
Aug.							
1	26.00	26.00	*94.00	8.05	7.75	8.40	8.05
2	26.00	26.00	*94.00	8.05	7.75	8.40	8.05
3	26.00	26.00	*94.00	8.05	7.75	8.40	8.05
5	26.00	26.00	*94.00	8.05	7.75	8.50	8.10
6	26.00	26.00	*94.00	8.05	7.75	8.50	8.10

*Nominal.

NEW YORK, Aug. 7.

The markets are quiet. Trading in copper is at a standstill awaiting official action on the price. Tin is scarce and quiet. Lead is very scarce and firm. Spelter was dull last week, but showed increasing strength this week. Antimony is quiet.

New York

Copper.—A conference of the producers of copper with the price-fixing committee of the War Industries Board is being held in Washington to-day (Wednesday), and the outcome probably will not be known until to-morrow or later. High-cost producers are asking for an advance to 27.50c. Some in the trade seem to expect that they will get it, while others believe that the present price of 26c. will be continued in effect after Aug. 15. Another matter to be discussed at the conference is the adjustment of old contracts to the 26c. price. Consumers have generally maintained that shipments should be made at the contract price, while producers have insisted on adjusting all contracts to the present price. The price-fixing committee will probably adjust the matter. There has been no trading of any account the past week because producers show no disposition to sell until the price to be in effect after Aug. 15 is settled. The nominal quotation for carload lots is 26c. and for jobbing lots of five tons and less, 27.35c. per lb.

Tin.—The tin situation is without marked change. Due to the many restrictions upon shipping and importation, trading has been brought almost to a standstill. The regulations recently adopted by the Federated Malay States, requiring licenses to ship from Singapore or Penang, are now being felt here. There are occasional offerings of 25-ton lots at prices authorized by the British Government. A few sales last week were made at 84c. and later at 86c. for September shipment from the Straits. Spot tin is still nominal at 94c., New York. Tin arrivals on the Pacific Coast in July were 6429 tons and on the Atlantic Coast 740 tons, a total of 7169. The quantity in stock and landing on July 31 was 265 tons. Spot Straits was quoted yesterday in London at £394, 10s. as compared with £385 a week ago.

Lead.—Prices continue firm on the basis of 7.75c., St. Louis, and 8.05c., New York, these being the quotations fixed by agreement of the producers. Speculators possessing a few carloads of lead have been offering small lots for sale at prices much higher. Jobbers ask 9c. for spot lots. Lead is very scarce due to large Government demands and the reduction in output last spring because of labor troubles.

Spelter.—This metal was dull last week but there was more interest and the price was firmer this week because of new Government inquiry. The average quotation to-day was 8.10c., St. Louis, and 8.50c., New York. Jobbers ask 9.50c. in New York for small lots from stock.

Antimony.—The market is quiet and the current quotation is 13c. to 13.25c., New York, duty paid, for prompt and early delivery.

Aluminum.—The trade was interested in published reports in which the National City Bank of New York advocated the substitution of aluminum for tin owing to the high cost of the latter and the difficulty of importing it. More than half of the world's aluminum is produced in the United States, and it was pointed out that for many articles of manufacture aluminum could economically and satisfactorily be used in place of tin. No. 1 virgin metal, 98 to 99 per cent pure, and scrap, have a fixed maximum Government price of 33c. per lb. in 50-ton lots, of 33.10c. per lb. in 15 to 50-ton lots and of 33.20c. per lb. in 1 to 15-ton lots.

Old Metals.—The market is quiet. Dealers' selling prices are as follows:

	Cents per lb.
Copper, heavy and crucible	26.00
Copper, heavy and wire	25.00
Copper, light and bottoms	23.00
Brass, heavy	17.75
Brass, light	13.25
Heavy machine composition	26.50
No. 1 yellow rod brass turnings	14.50-15.00
No. 1 red brass or composition turnings	23.50
Lead, heavy	7.62½
Lead, tea	6.25
Zinc	6.75

Chicago

AUG. 6.—Copper producers will attend a meeting in Washington, Aug. 7, at which they hope to have the price of copper advanced to 27.50c., effective Aug. 15. The demand for the metal is steady, especially for immediate shipment, and is being delivered freely. Tin is a little lower, and in lighter demand, with enough to meet the requirements, but little future metal is offered. Belief is general that plenty of lead is in existence, but that it is being withheld from the market, presumably in the hope that the Government will fix a higher price. Spelter is in light call, and weak. There has been a stiff demand for antimony, but the price is unaffected. We quote copper at 26c. for carloads and 27.30c. for less than carloads; tin, 98c. to $1; lead, 7.85c., nominal; spelter, 8.10c.; antimony, 14c. to 15c. On old metals we quote buying prices, less than carload lots, as follows: Copper wire, crucible shapes, 22.50c.; copper clips, 21.75c.; copper bottoms, 20.50c.; red brass, 21.50c.; yellow brass, 14c.; lead pipe, 6c.; zinc, 5.50c.; pewter, No. 1, 55c.; tinfoil, 65c.; block tin, 70c.

St. Louis

ST. LOUIS, Aug. 5.—The non-ferrous metals market has continued quiet but strong generally with the close today on car lots at: Lead, 7.75c.; spelter, 8.62½c. In less than car lots, quotations were: Lead, 8.25c.; spelter, 9.25c.; tin, $1.10, and none available; copper, 27.85c.; antimony, Asiatic, 16c. In the Joplin district, the usual quantity of high grade ores, basis of 60 per cent metal or zinc blende, was sold at $75 per ton, while the second grade ores ranged downward to $50 per ton with considerable sold at low prices and thus reducing the range average to about $55 to $57 per ton. Calamine was quiet with a wide range on the basis price, 40 per cent metal, from $28 to $38 per ton, while the average for the week for the district was about $34 per ton. Lead ore, basis of 80 per cent metal, was stronger and sold up to $101 per ton with the average for the week for the district at $99 per ton. On miscellaneous scrap metals, we quote dealers' buying prices as follows: Zinc, 5c.; lead, 6c.; tea lead, 5c.; light brass, 10c.; heavy yellow brass, 14c.; heavy red press, 19.50c.; light copper, 18.50c.; heavy copper and copper wire, 20c.; pewter, 30c.; tinfoil, 60c.

Employees of the large factories of Ft. Wayne, Ind., took this pledge on the occasion of an address to them by Major K. B. Ferguson of the British Army: "As long as the war lasts I will stick to my job. I will do an honest day's work, six days in the week, and overtime, if necessary. I will do anything else the President of the United States calls on me to do. So help me God."

The Ross Gear & Tool Co., Lafayette, Ind., has cut down working hours 30 minutes a day and will pay time-and-a-half for all hours in excess of 47 a week. The company also pays premiums for production. These premiums in July amounted to 55 per cent of the gross wages.

NEW USES FOR ZINC

Possible Substitute for Steel in Some Cases—Institute Is Formed

ST. LOUIS, Aug. 5.—With 150 producers of zinc and zinc products present, the foundation was laid for the establishment of an American Zinc Institute at a series of meetings held in the Hotel Statler roof garden July 29 and 30. In a general way the purpose of the institute will be to plan for the stabilization of the industry, particularly during the readjustment of conditions following the war.

Specifically, it was apparent from the addresses made at the organization meeting that the institute would aim at the following:

First.—The establishment of an elaborate research department for the twofold purpose of discovering and introducing new uses for zinc and of making the mining and production of zinc more economic.

Second.—Developing an export department for the promotion of foreign trade in zinc and zinc products so as to enable the American producers to meet and defeat the German competition after the war.

Third.—The bringing about of closer co-operation between zinc mining and zinc smelting interests for their mutual benefit.

Fourth.—The creation of a fair price for low grade ore, for while the Government has fixed a price for high grade zinc ore, it was pointed out by speakers at the convention that there is not the slightest uniformity of price for low grade ore, much to the detriment of the industry.

The consensus of opinion, as expressed at the meeting, was that the production of zinc had been stimulated to such a great extent through the war-time necessity of sulphuric acid and other zinc by-products that there was danger of a disastrous reaction when the country returned to a normal or pre-war consumption of zinc.

Two possible solutions were suggested for the overproduction, which all predicted would occur after the war, namely, restricting the production or increasing the consumption of zinc. For obvious reasons it was generally agreed that the latter would be the better plan.

The principal address on "New Uses of Zinc" was delivered by A. P. Cobb, vice-president New Jersey Zinc Co., New York. He said in part:

"The present shortage of steel has necessitated manufacturers turning to other metals in order that they may be able to produce their manufactured articles during these war times, and the present emergencies should be turned to our permanent advantage and profit. The refrigerator manufacturers are turning to zinc sheets, and it is well known that zinc makes not only a much more sanitary lining for a refrigerator than galvanized iron, but a more durable one, and so in the long run a less expensive one. Some of the States are considering the use of zinc for automobile license plates. This is a field which could be materially extended, at least so long as the scarcity of steel continues.

"Zinc for numerous small articles, such as shoe and corset eyelets, lace tips, shoe clips and metal buttons, is in every way as satisfactory as brass and materially less expensive. The enameling of zinc seems to offer no insurmountable difficulty for there is good reason to believe that it can be as beautifully and durably finished as other metals. Cornices, ceilings and other fancy sheet work heretofore made of copper and steel could as readily be made of zinc with the same advantage as to cost as in the case of roofing. Builders' hardware, lighting fixtures, ornamental work, such as grills, etc., are all entirely feasible.

"Trench mirrors of polished zinc are war-time articles. If zinc can be polished in time of war why not polish it in time of peace?—and turn the article so made to some advantage. Reflectors for automobile lamps, searchlights, etc., are suggestions along this line. Nickeloid, or nickel-finished zinc, has been extensively used in Germany in the manufacture of trays, ash receivers and various forms of knicknacks. This is another field which offers large possibilities for the use of zinc.

"Telephone and telegraph wires made by twisting two strands together helically—one of iron or steel to give it tensile strength and one of zinc to give it conductivity—may be used to supplant copper wire.

"Zinc of certain physical characteristics can be spun for ornamentation and fixture work. Zinc castings and alloy castings containing zinc are all subjects that have heretofore had little attention in this country. In this age of the automobile and tractor, this field could be made to require an enormous tonnage of zinc. How many of the parts of the present internal combustion engine, that are now made of cast iron or aluminum, could be made from an alloy, say, of zinc and aluminum? The possibilities in this field are tremendous."

The permanent officers of the institute will be chosen and its organization will be perfected by a committee of seven which was ordered to report within 90 days.

Joint Membership in Engineering Societies

The Cleveland Engineering Society and the American Association of Engineers have worked out an arrangement to promote joint membership. The plan is perfected and has already received the approval of the executive officers and now merely requires the endorsement of the members at large to become fully effective. The object is to provide that a member of either society may become a member of the other under the most inviting conditions in regard to entrance fees and dues. It is proposed at the start that the entrance fee be not required when a member of one society applies for membership in the other. Annual dues to the two societies will be less than three-fourths of the sum of the regular schedules. An engineer applying at the same time for membership in the two societies may join both at half the amount needed for the usual separate applications.

The effect will be in Cleveland that the local chapter of the American Association of Engineers will be operating as a team with the Cleveland Engineering Society but not absorbed, having its individual place and purpose, but co-operating, not hindering or handicapping. Favoring the plan of making membership in a local body of engineers essential to election as a member of a national engineering organization, the executive officers of the Cleveland Engineering Society believe the arrangement here described will tend practically to that result and are ready to enter into similar relations with other national bodies of engineers.

New Alloys for Antifriction Metals

WASHINGTON, Aug. 6.—From the French Ministry of Blockade and of Liberated Regions, the Bureau of Foreign and Domestic Commerce has received an interesting report on French experience with new alloys for antifriction metals, to take the place of compounds in which copper, bronze, tin, lead and antimony were essential parts. Different alloys have been made with bases of aluminum, cadmium, magnesium, and especially of zinc. The alloy which has given the best satisfaction has the following composition: Zinc, 63.3 per cent; tin, 21.3 per cent; lead, 12 per cent; copper, 3.3 per cent.

A new patent for an alloy of lead and cadmium, capable of replacing tin in solder as well as in the manufacture of bearings, is reported from Germany.

The first foreign country to order a number of "Eagles," built by the Ford Motor Car Co., at Fordson, Detroit, is Italy. Twelve of the boats are to be built and delivered as soon as possible and, according to reports from Italian officers in Washington, this first order will be followed by others. The boats are to be used against the Austrian fleet in the Adriatic sea.

PERSONAL

At his request, George M. Landers has been relieved of his duties as president of the North & Judd Mfg. Co., New Britain, Conn., in order that he may give his entire time to his work as assistant to State Food Director Robert Scoville. Mr. Landers remains with the company as a vice-president. The new officers are Howard C. Noble, president; E. M. Wightman, vice-president and secretary; Frederick M. Holmes, vice-president and treasurer; George M. Landers and Proctor Carr, vice-presidents; Samuel McCutcheon, assistant secretary; and A. H. Parker, assistant treasurer. Charles E. Glover, president Skinner Chuck Co. and vice-president American Hardware Corporation, and Proctor Carr, formerly sales manager United States Hames Co., Buffalo, were added to the directorate. Howard C. Noble, the new president, has been with the company for 46 years.

Herman C. Dornheim has resigned as secretary and treasurer of the Bronx Iron & Steel Co., and is now located in the structural and bar department of Robert Grant, Woolworth Building, New York, handling sales.

William C. Dunlap, treasurer American Multigraph Sales Co., Cleveland, has been appointed sales director, succeeding L. W. Jared, resigned. Mr. Dunlap will continue as treasurer in addition to his new duties as sales director.

W. Champlin Robinson, director bureau of oil conservation, United States Fuel Administration, announces the appointment of C. C. Winningham, Detroit, as chief of the gasoline section and director of publicity of the oil division. Under Mr. Winninham's direction will fall the work of eliminating the waste of gasoline by distributers and users, the use and conservation of lubricating oils, and the inauguration of methods for the reclamation of oils that have been used.

Charles W. Fairbanks of Fairbanks Steel Shovel Co., Marion, Ohio, has been elected vice-chairman of the Mansfield division of the Cleveland district of the Regional Industrial Commission of the War Industries Board. He will also be chairman of the machinery and parts section in the Mansfield division, which comprises seven north central Ohio counties.

George E. Randles, vice-president and general manager Foote-Burt Co., Cleveland, who has been in Washington for some time as assistant in the work of standardizing motor maintenance, has been appointed director of maintenance of the motor transport division of the United States Army at home and overseas.

E. Flatow has been appointed Pacific Coast manager for the Keppel Sales Co., Inc., succeeding D. W. Dodge, who resigned recently to enter the United States Army.

William Wieand, Weatherly, Pa., has been appointed assistant to the general manager of the Weatherly Foundry & Machine Co. Frank T. Hoffman has been appointed general foreman at the plant.

Frank P. Obenberger has resigned as general superintendent of the A. O. Smith Corporation, Milwaukee, to assume an active part in the management of the John Obenberger Forge Co., Milwaukee, in which he has held a large financial interest since its organization about three years ago.

Paul J. Barnard, Racine, Wis., has accepted a commission as captain in the Quartermaster Corps, U. S. A., and reported for duty Aug. 1. Captain Barnard formerly was sales manager of the Harvey Spring & Forging Co., Racine, later going in the same capacity to the Walker Mfg. Co., Racine, maker of lifting jacks and automobile accessories.

Arthur W. Berresford, vice-president and general manager Cutler-Hammer Mfg. Co., Milwaukee, has accepted appointment as the representative of Milwaukee employers on the community labor board created to co-operate with the State War Labor Board in the new Government labor control program.

A. F. Kempe, assistant to the vice-president Matlack Coal & Iron Corporation, 52 Vanderbilt Avenue, New York, is now studying naval aviation at the Massachusetts Institute of Technology, Boston.

J. M. Manley, secretary Cincinnati branch National Metal Trades Association, has been chosen as a member of the Federal Labor Control Board to represent employers in the Cincinnati district. The principal work of the board will be the recruiting and distributing of labor to essential industries. Mr. Manley has been secretary of the National Metal Trades Association at Cincinnati for some time, and his past experience well fits him for his new duties, that are added to those connected with his present work. He has always been a strong advocate of industrial education, and has unceasingly lent his support to the co-operative educational plan as adopted and carried out by the Engineering Department of the University of Cincinnati.

L. L. Bannon, superintendent at the plant of the Weatherly Foundry & Machine Co., Weatherly, Pa., has resigned to become superintendent at the plant of the Bonney Vise & Tool Works, Allentown.

E. J. Poole, superintendent at the plant of the Carpenter Steel Co., Reading, Pa., has been selected by local manufacturers as their representative on the Berks County labor-control board.

Elmer F. Harris, president of the Employment Managers' Association, Pittsburgh, and local district secretary for the National Safety Council, has been appointed superintendent of the Western Pennsylvania board of the Government employment service. Mr. Harris was formerly manager of the Mesta Machine Co., Pittsburgh. L. H. Burnett, assistant to the president, Carnegie Steel Co., and Hamilton Stewart of the Harbison-Walker Refractories Co., Pittsburgh, have been appointed members of the local board.

Robert A. Bachman, vice-president and general manager of the Edison Storage Battery Co., West Orange, N. J., has resigned in order to devote more time to private interests. He has been associated with Thomas A. Edison for seventeen years.

B. A. Mick entered the employ of the Hubbard Steel Foundry Co., East Chicago, Ind., as roll sales manager on Aug. 1. For the past 15 years he was engineer of the roll and mill department of the Mesta Machine Co.

George F. Pettinos, for some years a member of the firm of Pettinos Brothers, has recently engaged in business on his own account as a distributor of foundry supplies with offices in the Real Estate Trust Building, Philadelphia.

L. W. Adams has tendered his resignation as general superintendent of the Nova Scotia Steel & Coal Co., Ltd., New Glasgow, N. S., effective Sept. 1. His successor has not yet been appointed.

H. W. McAteer, president American Steel Export Co. and formerly comptroller Cambria Steel Co., is temporarily engaged in Philadelphia with the Emergency Fleet Corporation.

D. V. Foster, formerly assistant general sales agent Midvale Steel Co. and later connected with the general sales department and the Washington office of Midvale Steel & Ordnance Co. and Cambria Steel Co., has joined the sales organization of the Hess Steel Corporation, Baltimore, and will represent the company in the New York and New England territory with headquarters at New York.

The Brinly-Hardy Co. of Louisville, implement manufacturers, at a recent directors' meeting, accepted the resignation of F. M. Sackett, president, who as Kentucky Food Administrator and officer in several other companies has been unable to give the Brinly-Hardy Co. much attention. W. B. Hardy was elected president, having previously been vice-president.

R. Sanford Riley, president Sanford Riley Stoker Co., Ltd., Worcester, Mass., and of the Murphy Iron Works, Detroit, has been requested by the Emergency Fleet Corporation to arrange for supervision of trial

trips of all merchant ships now being turned out in this country. He has undertaken the organization of this department for the Emergency Fleet Corporation, but has an arrangement by which he will retain supervision of his other interests during his connection with the corporation.

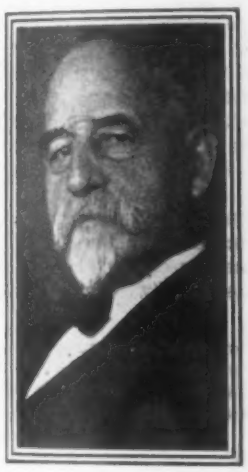
C. B. Banch has accepted a position with the United States Steel Corporation, ordnance department, Ambridge, Pa., as designing engineer. He was formerly in the employ of McKinney Steel Co., Cleveland.

Harry B. Chapman, formerly manager Chapman Engineering Co., Texas City, Tex., has entered the service of the Westinghouse Electric & Mfg. Co. machine Works, East Pittsburgh, Pa.

Joseph H. Cheetham, formerly chief mechanical engineer, McNab & Harlin Mfg. Co., Paterson, N. J., has been appointed superintendent of the Kunkle Valve Co., Fort Wayne, Ind.

OBITUARY

EDGAR ROBINSON died at Youngstown, Ohio, Saturday, July 20, in his eighty-third year. He was born Feb. 17, 1836, in Raynham, Mass. He enlisted early in the Civil War and went to the front as captain of Company C, Seventh Massachusetts Volunteers. Mr. Robinson for many years was prominently identified with the iron industry in Massachusetts. As is well known, southeastern Massachusetts was at one time the seat of this country's cut-nail industry. His father, Charles Robinson, and other members of his family, were actively associated by ownership and management with the formerly well-known iron mills of Taunton, Wareham, Bridgewater and Plymouth. Mr. Robinson leaves three sons, Theodore W. Robinson, vice-president Illinois Steel Co.; C. Snelling Robinson, vice-president Youngstown Sheet & Tube Co.; and Dwight P. Robinson, for a number of years a partner of Stone & Webster, Boston.



EDGAR ROBINSON

WILLIAM H. CONNELL, treasurer American Bridge Co. since its formation and president of the Edgemore Bridge Works when that company was absorbed by the American Bridge Co., died Aug. 3 at his home at Wilmington, Del., aged 73 years. He leaves a widow and four children.

CAPT. GEORGE P. MCKAY, Cleveland, treasurer Lake Carriers' Association, pioneer of the Lake Superior trade, and one of the best known vessel men on the Great Lakes, died Aug. 5 after a long illness. He was 80 years of age.

JOHN GLASGOW DOON, vice-president Fairbanks Scale Co., dropped dead July 28 while playing golf at Ardsley-on-the-Hudson. Mr. Doon was 61 years of age, and lived in Yonkers, N. Y. His death was due to heart disease.

WILLIAM ALBERT MYLER, secretary and treasurer Standard Sanitary Mfg. Co., Pittsburgh, died at his summer home, Patterson Heights, Beaver County, Pa., July 25, after an illness of several months, aged 67 years.

ROBERT P. SCOTT, inventor, and president of the Sinclair-Scott Co., Baltimore, manufacturer of canning-house machinery, died suddenly July 26, aged 67 years.

trips of all merchant ships now being turned out in

WAGE AWARD FOR IRON MINES

National War Labor Board Announces Decision in Alabama Controversy

WASHINGTON, D. C., Aug. 6.—Former President Taft and Frank P. Walsh, joint chairmen National War Labor Board, today rendered a decision in the controversy between the Sloss-Sheffield Steel & Iron Co. and its employees in iron mines in the Russellville, Ala., district. The award grants wage increases to all classes of workers; upholds the right of workers to organize and bargain collectively; condemns the so-called "permit system" by which it was alleged companies in the district agreed with each other not to employ a man until he could produce a permit from the company which last employed him; directs discontinuance of the company practice of exacting a 20 per cent discount for cashing advance pay-check for employees; provides for payment for overtime work; establishes a system of wage readjustments at six-month periods on basis of changing living conditions in community, and directs the appointment of an examiner to supervise the execution of award.

The award establishes a wage schedule by which no worker shall receive less than $3.99 for a 10-hr. day.

The following table shows the rates of pay fixed, first figures cents per hour for first eight hours, second column the pay for additional hours, third column the total for 10 hours work:

	Rate for first eight hours	Additional hours	Pay for 10 hours
Common laborer	38c.	47½c.	$3.99
Trammers and dumpers	40c.	50c.	4.20
Trackmen, foremen	42c.	52½c.	4.41
Trackmen, helpers	40c.	50c.	4.20
Trackmen, laborers	40c.	50c.	4.20
Car repair men	44c.	55c.	4.62
Washer foremen	44c.	55c.	4.62
Washer laborer	40c.	50c.	4.20
Steam shovel engineers	50c.	62½c.	5.25
Steam shovel cranemen	40c.	50c.	4.20
Steam shovel pitmen	40c.	50c.	4.20
Steam shovel firemen	40c.	50c.	4.20
Dinkey engineers	40c.	50c.	4.20
Dinkey firemen	44c.	55c.	4.62
Carpenters	48c.	60c.	5.04
Carpenter foremen	55c.	68¾c.	5.77½
Slush pond laborer	40c.	50c.	4.20
Stationary boiler firemen	44c.	55c.	4.62
Pumper central station	45c.	56¼c.	4.72½
Car tenders	40c.	50c.	4.20
Common laborer, outside	38c.	47½c.	3.99
Common laborer, foremen	42c.	52½c.	4.41
Machinists' helper	42c.	52½c.	4.41
Lathe man, machine shop	60c.	75c.	6.30
Machine shop helpers	40c.	50c.	4.20
Machinists at washers	50c.	62½c.	5.25
Blacksmiths at machine shop	55c.	68¾c.	5.77½
Blacksmiths at washers	45c.	56¼c.	4.72½
Blacksmiths' helpers	38c.	47½c.	3.99
Switchmen	38c.	47½c.	3.99
Signalmen	40c.	50c.	4.20
Night watchmen	40c.	50c.	4.20
Teamsters	40c.	50c.	4.20
Talleymen	$90 to $95 per month		
Stablemen	$85 per month		

The Sheffield Iron Corporation and the Suwanee Iron Co., operating in the same district, after difficulties with their employees, asked Mr. Taft and Mr. Walsh to make their award in the Sloss-Sheffield controversy applicable to the entire district, comprising the three companies, which has been done.

The award as to wages is made retroactive to April 17, 1918.

The Velix Scrap Iron & Machinery Co., Detroit, announces the opening of a branch office at 605 Society for Savings Building, Cleveland, with Samuel G. Cornsweet as manager.

RECRUITING LABOR

Government Plans for Regulating Distribution of Unskilled Workers

WASHINGTON, Aug. 6.—Facing a possible shortage of 1,000,000 unskilled workers, Government control of the recruiting and distribution of unskilled labor for war industries was made effective August 1, by an announcement of the Department of Labor. The United States Employment Service of that Department now is the only agency through which any employer, engaged wholly or partly in war work, and whose maximum force exceeds 100 skilled or unskilled workmen, can obtain unskilled labor. The announcement exempts railroads and farmers from this order, although guaranteeing both of these industries exemption from recruiting at the hands of the Government for other industries. For the present, the recruiting of skilled labor is also exempted from these rules.

The departmental order is a sweeping one, excluding even the use of advertising of any kind by employers to attract such labor. The order authorizes the Employment Service, however, to continue the use of the field recruiting forces of the war industries under strict federal control. According to the department officials, the rivalry of war industries in the securing of unskilled men has done much to demoralize the country's war production and has caused an unusual increase in the migration of laborers from one industry to another.

Large Shortage Expected

That the situation has become acute is evidenced by the announcement of the department that preliminary returns revealed a shortage of 500,000 unskilled workers, and further returns indicated that the complete figures would reach 1,000,000. Every industry in the country has been asked to telegraph to the department its present requirements for unskilled labor as well as the expected demands for the next two months, and to inform the local office of the United States Employment Service of its day-to-day needs.

The half million unskilled laborers now known to be required constitutes the total of the first assignment of quotas which the States will be called upon to furnish. Each State director of the Federal Employment Service will receive his State's quota and will reapportion it to local districts. When the returns from the war industries are complete, a supplementary quota will be allotted each State. It will be determined on the same proportionate basis.

The recruiting of the local quotas will be under the general direction of community labor boards, composed of a representative, each, of the United States Employment Service and of the locality's employers and employees. The branch offices of the Federal Employment Service will be used in securing workers and the volunteer agents of the Public Service Reserve —the labor finding arms of the Employment Service— will assist. The reapportionment of State quotas will be done by the State directors with the assistance of State advisory boards, consisting of the State director and two representatives each of a State's employers and workers.

Penalty for Violations

The departmental announcement of the change declares that few violations of the order are expected. Should such develop, the Department of Labor will investigate and if the complaints are well founded, it will report the facts to the War Industries Board. Instead of court proceedings, the penalty for refusal to obey the rule will be inflicted by a shutting off of fuel and materials through the various Government agencies.

As to skilled labor, the department announced that there would be no restrictions upon employers, engaged in war work, other than that they should so conduct their efforts as to avoid disturbing men already engaged in other war work, including railroads, farms and mines, as well as work covered by Government contracts. The State directors of the Employment Service have been instructed to give all possible assistance to employers engaged in war work who desire to recruit skilled labor.

For the present, war employers are under no restrictions as to advertising for skilled labor, other than that such advertising must avoid creating unrest among men already in war work. Local offices of the United States Employment Service may advertise for the kinds of men needed in war work, without mentioning wages offered or names of employers. Employers engaged in non-war work are permitted to continue recruiting and advertising, so long as they do not compete with the Government or employers engaged in war work.

Cannot Pay Commissions

The regulations permit employers engaged in war work to hire unskilled workers who apply at the plant, without solicitation—either direct or indirect. Where war employers are authorized to continue the use of their recruiting forces to secure unskilled labor, they are prohibited from the use of any fee-charging agency, or any agents or labor scouts on a commission basis.

Authorizations for the continued use of recruiting forces may be granted by the State directors of the States in which the industries having them are operating, but the State directors will have control over such forces. Permission to recruit unskilled labor in a State, other than the one in which the work is located, may be obtained from the Department of Labor at Washington, on the recommendation of the State director for the State in which the men are needed. No unskilled laborers may be moved from one employment district to another within a State without the State director's authorization; and none may be transported from one State to another without the department's authorization. When such movements are authorized, employers must file a statement with the nearest Federal employment office, showing the number of men transferred, the wages offered and other terms and conditions of employment promised the men.

The Department of Labor defines "war work" as follows:

1. The manufacture of products or erection of structures directly or indirectly supplied to some department of the Government for use in connection with the war. "Indirectly supplied" includes goods delivered under sub-contracts to Government contractors.
2. Coal mining is wholly war work.
3. Railroads and farms are engaged in war work to the extent that under this program they are protected from all recruiting by other industries.

The Government employment authorities are planning an elaborate recruiting service to secure the men needed to make up the present deficiency.

St. Louis Production District

WASHINGTON, Aug. 6.—The Ordnance Department announces the establishment of a new production district in the United States to be known as the St. Louis Production District. Its headquarters will be at St. Louis, and M. E. Singleton of that city has been named ordnance district chief. The territory to be embraced in the St. Louis District, as well as the date on which the St. Louis office will start operations, will be announced later.

Division of the country into production districts was undertaken by the Ordnance Department as part of its plan of decentralization and in order to promote more rapid and efficient methods of carrying out the enormous ordnance program. Under this system, the production work in each district is under its own responsible head, who is answerable directly to the Ordnance Department in Washington.

The Trumbull Steel Co., Warren, Ohio, is converting more of its sheet mills into tin mills, giving a total of 23 mills and 10 sheet mills. It is stated that when the changes are completed the company will have a monthly capacity of 125,000 boxes of tin plate.

EIGHT-HOUR DAY

Milwaukee Shops Will Figure on that Basis—Labor Trouble at Madison

MILWAUKEE, Wis., Aug. 5.—The basic 8-hr. day was inaugurated on Aug. 1 in many large machine-shops in Milwaukee and immediate vicinity as a voluntary step by the employers. Between 30,000 and 40,000 operatives in the metalworking industry are affected by the change, which means a net increase of approximately 5 per cent in wages but no reduction in the actual schedules of working hours. The men will continue to work the same number of hours as before, but they will receive time and a half for all time worked in excess of eight hours. It is explained by Richard P. Tell, president Milwaukee Metal Trades and Founders' Association, that the requirements of the Government are so pressing that a curtailment of working schedules would seriously affect production, and for this reason the former schedules are being kept in effect for the time being. In most plants, the men are working from 50 to 52 hours a week.

Serious labor trouble threatened to develop at Madison, Wis., on Aug. 1, but the intervention of Government labor conciliators prevented only a slight interruption in working schedules. Nearly 650 machinists in three plants which are devoting practically their entire facilities to war work walked out on the morning of Aug. 1, and were to have been followed by men in ten other metalworking plants, but after a conference the men agreed to return to work on the morning of Aug. 2, it being provided that the difficulties be adjusted by the War Industries Board as quickly as possible. The actual walkout affected the Steinle Turret Machine Co., Madison-Kipp Lubricator Co. and Four Lakes Ordnance Co. The trouble involves hours of work, hourly wages, and working conditions, and has been in evidence for several months.

More than 20,000 operatives in Milwaukee shops which are manufacturing equipment and supplies for the Emergency Fleet Corporation were pledged to stick to their jobs for the duration of the war as the result of a campaign conducted by Willis Moore and Lieut. Bowlby, U. S. N.

Ford Plan Modified

Heretofore, Ford Motor Co. employees, in order to receive the minimum wage of $5 a day, had to be with the company for a period of six months. A few days ago, it was announced that to be entitled to the $5 schedule, employees need be with the company only 30 days, provided they met all the other requirements. The minimum wage scale has been raised from 43c. an hour to 50c., and it is further stated that all night workers are now receiving a bonus of $1 each night. There are said to be considerably more workers now receiving much above the minimum wages than ever before.

Chicago Finding Herself in War Work

The increasing number of war workers in the Chicago district, with the prospect of the employment of many thousands more on production of Government requirements, has actuated various interests in the making of surveys to determine to just what extent the housing and transportation facilities of the city are adequate. On the south side of the city, the Chicago Renting Agents' Association has undertaken a survey of housing accommodations. The district involved has been divided into 97 zones and 200 men are making a house-to-house canvass, making lists of all available houses, apartments and rooms. It is estimated that in the district there are homes for 50,000 to 60,000 war workers.

Another survey has transportation facilities in view, and another, being made under the supervision of a committee of which John M. Glenn of the Illinois Manufacturers' Association is chairman, is investigating the industrial resources of the district. Clayton Mark, chairman of the board of directors of the Steel & Tube Co. of America, is chairman of the finance committee in charge of disbursements for the various surveys.

Shortage in New York

WASHINGTON, Aug. 6.—A shortage of approximately 9 per cent exists in the skilled and unskilled labor of the New York production district of the Ordnance Department, according to a statement issued by the Department of Labor. Reports from other districts, it announces, are not available, but "it is understood" that the situation in the New York district is better than the average elsewhere. The department declares that it expects an improvement in this labor situation from the Government's taking over of the exclusive placement of unskilled labor required by war industries. The Ordnance Department officials are already availing themselves of the Government labor agencies to meet the shortage of unskilled labor in several of the large rolling mills which supply material to cartridge factories.

Collective Bargaining Established

Wage increases of from 10 to 20 per cent were awarded Aug. 3 by the National War Labor Board to the employees of the General Electric Co. at Schenectady, N. Y., and Pittsfield, Mass. The wage increases are effective from May 1 and will continue through the duration of the war, except that each side may reopen the case before the board after next Feb. 1 at intervals of six months.

The award of the board is in settlement of a controversy which developed some weeks ago between the company and its employees at both the Schenectady and Pittsfield plants, and which resulted in a strike at each plant. The men, however, returned to work pending the action by the board. Both plants are engaged on large Government war orders.

The board also awarded equal pay for women and men performing the same service and established a minimum wage of $15 a week for women at both plants.

The bonus system as such was abolished, and the bonuses formerly granted by the company will be paid hereafter as wages. Collective bargaining also was established at the Pittsfield plant.

Shortage of Artisans

DETROIT, Aug. 5.—Government officials called a meeting of munition manufacturers of Detroit last week and urged them to protect in every possible way the skilled workmen in their employ, pointing out that there is a shortage in the United States at the present time of 250,000 skilled artisans. Fred Robinson, representing the Ordnance Department, stated that at the present time Detroit is not suffering from the shortage to the extent that Eastern cities are, due to the drifting of men from automobile factories which have decreased production into munition work. This drifting has about ceased, and every effort must be made by manufacturers to keep their necessary employees on the production end of the work, according to Mr. Robinson.

Housing Projects in Many Places

The Bridgeport Housing Co., Bridgeport, Conn., will use a Government loan of $3,000,000 to build houses for 608 families in that city. The contract has been awarded to the Cauldwell-Wingate Co., New York, and work will begin this week. Instructions have also been received from Washington to proceed with studies and plans for other houses in a project which will cost about $2,000,000.

The United States Government, through the Industrial Housing Commission, will build 21 dormitories, one mess hall and one recreation building at Quincy, Mass., for employees of the Fore River Works of the

Bethlehem Shipbuilding Corporation. Bids are now being asked.

The Government is also nearly ready to ask bids on a project for 125 houses at Bath, Me., for employees of the Bath Iron Works, shipbuilders.

The Merchant Shipbuilding Corporation, Bristol, Pa., has broken ground for construction of 200 new homes for employees at Harriman, near Bristol. The company is planning to add about 3000 men to its present working force.

The Industrial Housing Department of the Government, Washington, is having plans prepared for new housing developments as follows: Homes at Newport, R. I., $300,000, Clarke & Howe, Providence, architects; 800 new dwellings for workmen on Oregon Avenue, Philadelphia, to cost $3,500,000, Rankin, Kellogg & Crane, architects, 1012 Walnut Street, Philadelphia; 1000 two-story homes for workmen at Erie, Pa., A. H. Spahr, architect, Keystone Building, Pittsburgh; new homes for workmen at Elizabeth, N. J., to cost $500,000, Charles W. Oakley & Son, 1259 Clinton Street, Elizabeth, architects; new homes for workmen at Niagara Falls, N. Y., to cost $6,000,000, Dean & Dean, 137 South La Salle Street, Chicago, architects. Otto M. Eidlitz is director of the department.

The Alan Wood Iron & Steel Co., Philadelphia, has awarded a contract to A. B. and C. F. Millett, Philadelphia, for the construction of 61 two-story brick houses for employees at its Swedeland, Pa., works.

The E. I. du Pont de Nemours Co., Wilmington, Del., will build 60 new houses for employees at its Gibbstown, N. J., works, to cost from $3,000 to $7,000 each.

The Government has taken title to a large tract of property in the vicinity of the works of the Wright-Martin Aircraft Corporation, New Brunswick, N. J., and will use the site for the erection of about 500 dwellings for workers engaged in local war industries. The homes will average in cost from $2,500 to $4,000, and it is understood that an appropriation of $1,500,000 has been made for this housing development. Construction will be commenced at once and it is expected to have the dwellings ready for occupancy in the fall.

The Westinghouse Electric & Mfg. Co., Pittsburgh, has arranged for the construction of 300 two and one-half story, brick and stucco dwellings for employees at its new works at Essington, Pa. Three apartment houses will also be erected. The project will be carried out in conjunction with the Emergency Fleet Corporation.

Workers in Essential Industries

By a vote taken Aug. 1, the strikers at the Lynn, Mass., plants of the General Electric Co., who went out July 15, agreed to return to work, pending a decision of the controversy by the National War Labor Board. A point at issue is the re-employment of 16 workers who, it is alleged, were discharged for organizing activities. The company has decided not to re-instate these men until their cases have been investigated. About 90 per cent of the workers returned, the others in many cases having found employment elsewhere. The strike resulted in great curtailment of important war work.

Conferences have been held by Maj. B. H. Getchell, Ordnance Department, with both sides in the controversy between the Smith & Wesson Co., Springfield, Mass., and its employees. Maj. Getchell was accompanied by Capt. C. E. Fitzpatrick, Bridgeport ordnance office, and Joseph Mack, Detroit. No statement has yet been issued. Work is continuing without interruption.

The Bosch Magneto Co., Springfield, Mass., has granted voluntarily a 10 per cent raise in pay to all its shop employees, affecting about 900 workers.

At a meeting of employees of the Oliver Iron & Steel Co., Pittsburgh, held under the auspices of the Emergency Fleet Corporation at the works, July 29, the men pledged themselves to work continuously until the war is won.

To assist employees entering the service, William G. Fisher, president of the International High Speed Steel Co., Rockaway, N. J., has arranged a plan providing for the presentation of a Liberty Bond and wrist watch to each man or boy leaving the plant to serve his country. In addition, where the employee agrees to carry a life insurance policy for the full amount issued by the Government, the company arranges to send the nearest relative $10 a month throughout the period of service.

The Brooklyn Rapid Transit Co., Brooklyn, N. Y., is now giving employment to more than 100 women at its car shops. The women are being instructed in the operation of light machines, cleaning and repairing equipment, installing electric wiring and other work, receiving the same wages as male employees in the different lines of work. The women are also being trained in first aid under the instruction of a physician.

Employees at the boiler works of the Babcock & Wilcox Co., Bayonne, N. J., have pledged to purchase War Saving Stamps to the amount of $12,000 from the present time until Jan. 1, 1919. The campaign is being carried out by the Babcock & Wilcox club members. The shop sales of stamps have increased from $37 to $282 a week.

Over 100 employees at the Davidson, Pa., works of the H. C. Frick Coke Co., near Connellsville, have taken a pledge to work continuously in the production of coke until the war is won.

Following a strike of several weeks, metal workers at Salt Lake City, Utah, have received an advance in wages, totaling $5 a day as the rate of pay until Sept. 1; $5.60 a day, from Sept. 1 to Oct. 1; and $5.75 a day from Oct. 1 until Jan. 1, 1919.

Electricity in the Study of Refractories

A plea for the application of the electric furnace to the study of refractories with a view to the manufacture of new articles from materials that at present are not easily fusible was contained in a recent paper before the refractory materials section of the Ceramic Society (British) at Sheffield, England, by Dr. R. S. Hutton. He pointed out that the temperature of the open-hearth steel furnace is about 1650 deg. C., and that refractories in general use for the construction of these furnaces are seldom produced or tested under much higher temperatures. Attempts should be encouraged to provide a higher margin of safety for the refractories now demanded for fuel-heated furnaces. One of the chief hindrances to rapid progress lay undoubtedly in the fact that so many investigators were limited to temperatures obtainable with fuel heating, and far too little seemed to have been done, and to be in progress of applying, in works or laboratory, the electric furnace to the preparation of raw material, and the firing of products made from such material. Was it too much to hope that in a short time material would be available, in the form of bricks and other products, made from highly refractory material, and guaranteed as having been subsequently fired, in its formed state, at 2000 deg. C.? Another author, W. J. Rees, Sheffield University, in "A Note on a Firebrick from the Crown of an Electric Steel Furnace," described the excellent behavior of a brick made from the refractory clay of Northwest Ayrshire. The brick stood 145 charges in a half-ton furnace. A second crown of the same material had stood well above 100 charges, and was still giving good service. Unquestionably the clay referred to had valuable refractory properties.

Freyn, Brassert & Co., consulting engineers, Chicago, have been retained by Leflaive & Cie. (Anciens Etablissements Biétrix, Leflaive & Cie.), La Chalessière, St. Etienne, France, to design certain rolling mill equipment.

Handling Coal and Ash at Youngstown

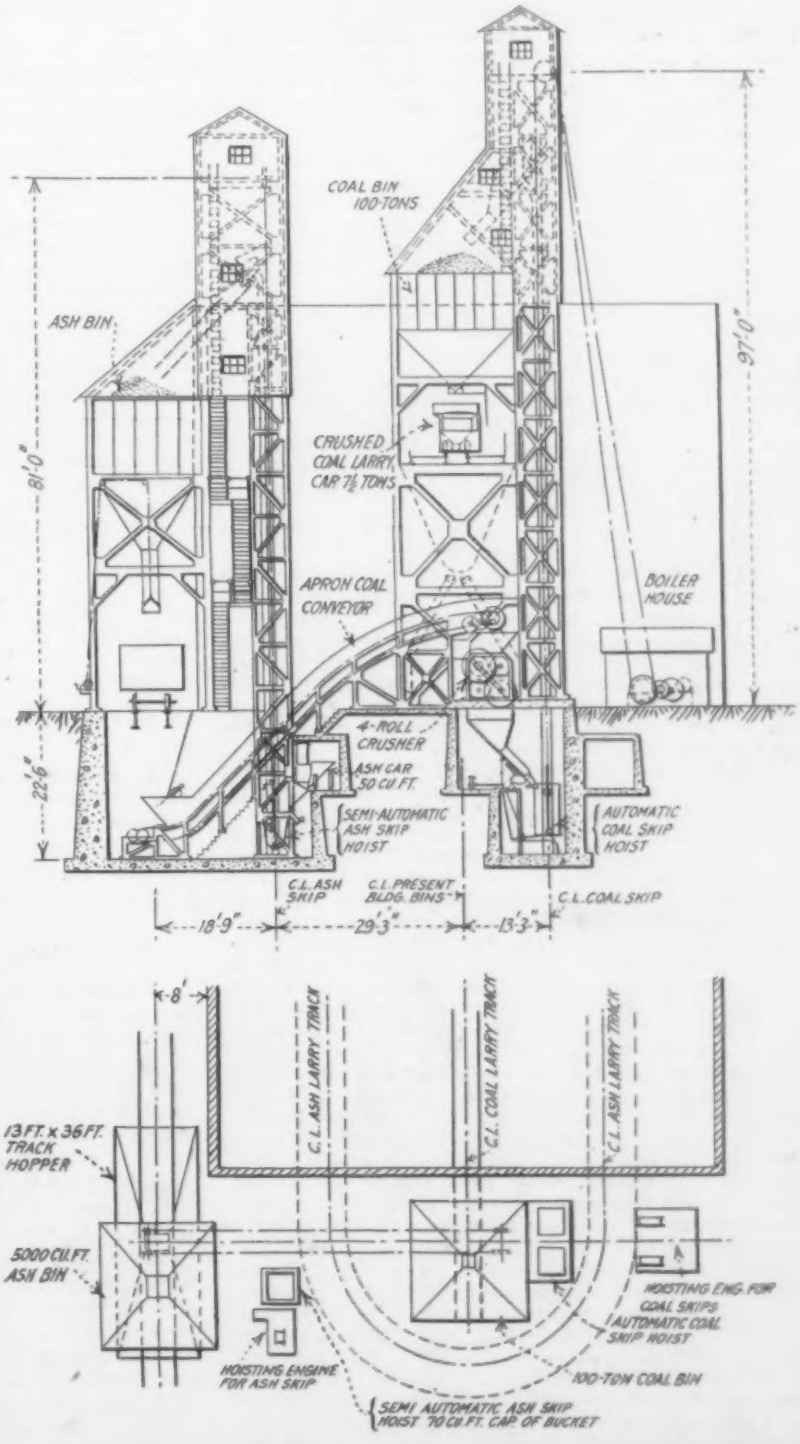
Compact Arrangement of Equipment at New Boiler House of Republic Iron & Steel Co. for Disposing of 200 Tons per Hr.

THE Republic Iron & Steel Co. is building at Youngstown, Ohio, adjacent to its Haselton furnaces, a new boiler house, designed to contain ideas in construction not ordinarily used in blast furnace and steel plant installations. The portion of the plant being installed at this time covers a building 75 ft. wide by 65 ft. long, of steel and brick construction, the steel work being furnished by the McClintic-Marshall Co. The building is provided with steel sash furnished by the Truscon Co., Youngstown, and particular attention has been given to securing a maximum amount of lighting and ventilation. The plans provide for liberal extensions to meet future requirements.

The building is set on concrete pile supplied by the Raymond Concrete Pile Co., New York, and the foundations are being put in by the Dravo Contracting Co., Pittsburgh. The boiler floor is set 8 ft. above the ground level, bringing it above high-water level, and there is a basement below this level, 18 ft. in depth, in which are located in a separate compartment four radial - flow forced-draft fans furnished by the Green Fuel Economizer Co. and driven by turbines supplied by the Kerr Turbine Co. which serve four 1130-hp. Babcock & Wilcox water - tube boilers equipped with Taylor underfeed stokers, and capable of being operated at 200 per cent rating continuously.

The boilers are equipped with Babcock & Wilcox superheaters, and are provided with soot blowers. The boilers are each equipped with an economizer, located on a floor above the boilers, and furnished by the Green Fuel Economizer Co. Separate turbine-driven radial-flow induced-draft fans serve each economizer, the fans being furnished by the Green Fuel Economizer Co. and the turbines by the Kerr Turbine Co. A complete coal and ash-handling plant of 200 tons per hr. capacity to serve the boilers is being supplied by the Bartlett & Snow Co., Cleveland.

The coal for the plant is to be brought in in railroad cars, discharged into a track hopper, and from there transferred by means of an apron conveyor to a coal crusher, after which it is delivered by an automatic double skip-bucket hoist to an overhead distributing bin, set at the end of the boiler house. A 7½-ton larry car transfers the coal from the distributing bin to the coal bunkers in front of the boilers, located on the center line of building, as the boilers are set in pairs and face each other. The coal is delivered from the bottom of the bunkers by means of gates and chutes to hoppers placed



The Coal Is Discharged Into Hopper at Left, Passed By Apron Conveyor to Crusher and Thence by Automatic Skip Hoist to Storage Bin and Finally to Larry Car Supplying Boilers. The ash car empties into the other skip hoist which discharges into bin and ash is carried away by car from same point at which coal is unloaded

at the front of the boilers which supply the stokers.

The ashes are collected in hoppers under the boilers in the basement, and are dumped into an electrically operated ash car running on a track in the basement, and are delivered by the ash car to a semi-automatic single-bucket hoist, set at the end of the building adjacent to the coal equipment, by which they are elevated and stored in a 5000-cu. ft. ash bin located above the coal track hopper, from where they are discharged into empty coal cars.

TRADES CLASSIFIED

Different Kinds of Workmen Described by Director-General McAdoo

WASHINGTON, Aug. 6.—In connection with the official announcement of the new wage scale for employees in the mechanical departments of the railroads under Federal control, Director General McAdoo has promulgated a classification of trades that will be of great interest to all manufacturers not only because it is the first attempt at official definition of the duties of skilled workmen but also because of the nation-wide application of the classification and the wage rates thereunder, which will govern national railroad shops in every section of the country. The classification of workers includes the following:

Machinists.—Employees skilled in the laying out, fitting, adjusting, shaping, boring, slotting, milling, and grinding of metals used in building, assembling, maintaining, dismantling, and installing locomotives and engines (operated by steam or other power), pumps, cranes, hoists, elevators, pneumatic and hydraulic tools and machinery, scale building, shafting, and other machinery; ratchet and other skilled drilling and reaming, tool and die making, tool grinding and machine grinding, axle, wheel and tire turning and boring; engine inspecting; air equipment, lubricator and injector work; removing, replacing, grinding, bolting and breaking of all joints on superheaters, oxy-acetylene, thermit and electric welding on work generally recognized as machinists' work; the operation of all machines used in such work including drill presses and bolt threaders using a facing, boring or turning head or milling apparatus, and all other work generally recognized as machinists' work.

Machinist apprentices.—Include regular and helper apprentices in connection with the above work.

Machinist helpers.—Employees assigned to help machinists and apprentices. Operators of all drill presses and bolt threaders not equipped with a facing, boring or turning head or milling apparatus, bolt pointing and centering machines, wheel presses, bolt threaders, nut tappers and facers; cranesmen helpers, tool-room attendants, machinery oilers, box packers and oilers; the applying of couplings between engines and tenders, locomotive tender and draft rigging work, except when performed by carmen.

Boilermakers.—Employees skilled in laying out, cutting apart, building or repairing boilers, tanks and drums, inspecting, patching, riveting, chipping, caulking, flanging and flue work; building, repairing, removing and applying steel cabs and running boards; laying out and fitting up any sheet iron or sheet steel work made of 16 gage or heavier, including fronts and doors; grate and grate rigging, ash pans, front and netting and diaphragm work; engine tender steel underframes and steel tender truck frames, except where other mechanics perform this work removing and applying all staybolts, radials, flexible caps, sleeves, crown bolts, stay rods and braces in boilers, tanks and drums, applying and removing arch pipes; operating punches and shears for shaping and forming, pneumatic staybolt breakers, air rams and hammers; bull, jam and yoke riveters; boilermakers' work in connection with the building and repairing of steam shovels, derricks, booms, housings, circles and coal buggies; I beam, channel iron, angle iron and tee iron work; all drilling, cutting and tapping, and operating rolls in connection with boilermakers' work; oxy-acetylene, thermit and electric welding, on work generally recognized as boilermakers' work; and all other work generally recognized as boilermakers' work.

Blacksmiths.—Employees skilled in welding, forging, shaping, and bending of metal; tool dressing and tempering; spring making, tempering, and repairing; potashing, case and bichloride hardening; flue welding under blacksmith foreman; operating furnaces, bulldozers, forging machines; drop-forging machines, bolt machines and Bradley hammers; hammersmiths, drop hammermen, trimmers, rolling mill operators; operating punches and shears doing shaping and forming in connection with blacksmiths' work; oxy-acetylene, thermit and electric welding on work generally recognized as blacksmiths' work, and all other work generally recognized as blacksmiths' work.

Sheet-metal workers.—Sheet-metal workers shall include tinners, coppersmiths and pipefitters employed in shop yards and buildings and on passenger coaches and engines of all kinds, skilled in the building, erecting, assembling, installing, dismantling and maintaining parts made of sheet copper, brass, tin, zinc, white metal, lead and black planished and pickled iron of less than 16 gage, including brazing, soldering, tinning, leading and babbitting; the bending, fitting, cutting, threading, brazing, connecting and disconnecting of air, water, gas, oil and steam pipes; the operation of babbitt fires and pipe-threading machines; oxy-acetylene, thermit and electric welding on work generally recognized as sheet-metal workers' work, and all other work generally recognized as sheet-metal workers' work.

Molders.—Include molders, cupola tenders, and core makers.

Molder apprentices.—Include regular and helper apprentices in connection with the above.

Molder helpers.—Employees regularly assigned to help molders, cupola tenders, core makers, and their apprentices.

The schedule of rates and method of application adopted by the Director-General for the railroad shops are as follows:

For the above classes of employees (except apprentices and helpers) who have had four or more years' experience and who were on Jan. 1, 1918, receiving less than 55c. per hr., establish basic minimum rate of 55c. per hr., and to this basic minimum rate and all other hourly rates of 55c. per hr. and above, in effect as of Jan. 1, 1918, add 13c. per hr., establishing a minimum rate of 68c. per hr.

The Director-General recognizes that the minimum rates established herein may be exceeded in the case of men of exceptional skill, who are doing special high-grade work, which has heretofore enjoyed a differential. Such cases would include patternmakers, passenger car repair men, oxy-acetylene, thermit, and electric welding in car repair work, etc., and should be presented to the Board of Railroad Wages and Working Conditions for recommendation.

The above classes of employees (except apprentices and helpers) who have had less than four years' experience in the work of their trade will be paid as follows:

One year's experience or less, 50c. per hr.

Over one year and under two years' experience, 53c. per hr.

Over two years' and under three years' experience, 57c. per hr.

Over three years' and under four years' experience, 62c. per hr.

In promulgating this classification and wage schedule, the Director-General makes an urgent appeal to all railroad employees to devote themselves patriotically to the service of the country and thus to justify the substantial increases in compensation and betterment of working conditions provided by the Government.

More Manganese Found in Colon District

An American syndicate commenced early in 1916 to ship manganese ore to the United States from the Mandinga mines, about 70 miles east of Colon. In spite of the difficulty in getting transportation, some 18,000 tons has been shipped and 4000 tons awaits shipment from the mines. This syndicate has taken steps to obtain a concession to mine manganese ore at a place 12 to 15 miles south of Porto Bello, on the Boqueron, a branch of the Chagres river. This deposit appears to be extensive, and if on further investigation the ore is found in sufficient quantities and of a marketable grade mining will be undertaken if the syndicate feels warranted in going to the expense of putting in some sort of conveying system to transport the ore to the port of Porto Bello, about 20 miles east of Colon, for shipment to the United States. The Bureau of Foreign and Domestic Commerce, Washington, is in communication with the company carrying on the operation.

The offices of the Albro-Clem Elevator Co., which were formerly at Seventh Street and Glenwood Avenue, Philadelphia, are now located at Erie Avenue and D Street, that city.

BRITISH BASIC STEEL OUTPUT

Basic Open-Hearth Compared with the Electric —High Phosphorus and Oxidized Steel

J. N. Kilby, in his paper before the Iron and Steel Institute in May in London, on "Defects in Steel Ingots," an abstract of which was published in THE IRON AGE of Aug. 1, added to it some remarks on basic open-hearth steel with special reference to the electric process. These are reproduced below and contain some important generalizations on the phosphorus content of basic steel and its relation to the oxidation of steel:

During the last three years particularly, the growth of the electric process of steel-making has been nothing less than phenomenal. No one can dispute that this process can produce material easily, which in our acid or basic open-hearth would present considerable difficulty.

Of the many claims of the process, freedom from slag or gas s has been most prominent. Correct manipulation will most probably justify this claim, but material is sometimes made which, as regards defects, rivals that by any other process. This defective material has been obtained naturally by wrong manipulation and the non-fulfillment of the principles of sound steel-making, and the fault is not attributable, therefore, to the process.

Defects in Both Steels

The defects from which our basic open-hearth steel suffers are due to similar causes as in the case of the electric process. That high-grade material can be made and is made on the basic hearth is undoubtedly correct. Numbers of otherwise practical men couple thoughts of basic steel with the inseparable phosphate slag, which has perhaps been the main obstruction to producing sound high-grade steel. A good many of the claims of the electric basic furnace apply equally as well to basic open-hearth.

The main difference in the two processes, ignoring certain mechanical advantages, is the quick supply of local intense heat in the electric furnace. The physical state and chemical composition of the slag in a basic open-hearth process are the main essentials for success. Giving full appreciation to the valuable work done in this country by E. H. Saniter and other eminent metallurgists, in working out the process as a formidable competitor of the acid open-hearth, little has been done in establishing its position in the industry so far as special and alloy steels are concerned. The failure of the material is not due to the process, but to incomplete exploitation or faulty manipulation.

If the basic open-hearth process is worked with highly phosphoric raw material direct, and with one slag only, it will not prove to be a serious rival of the other processes in the special steel trades. I may be told that the particular advantage is in its adaptability to the use of almost any class of raw material.

Fig. 1.—Section of Basic Open-Hearth Steel, Made for Tires, Showing Unsoundness Due to Unsuitable Conditions of Slag and Bath at Tapping.

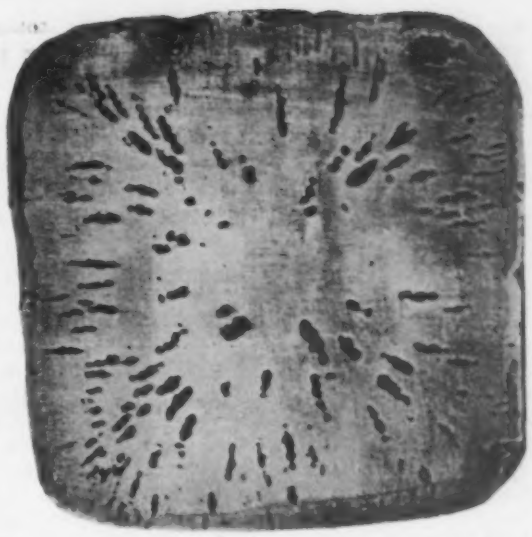


Fig. 2.—Section of Electric Steel Ingot, Showing Blowholes (Wide Steel), Lappiness, or Folds in the Ingot, and Included Unfluxed Fireclay.

High Phosphorus and Oxidation

I maintain that the load (if I may use the term) of the working of the charge is in ratio to the phosphorus content; and that the means necessary for its removal constitute the first source of danger in the way of poor material. Charges relatively high in phosphorus have to be more than liberally dosed with oxide to effect elimination of that element, leaving behind in the steel the undesirable oxides producing the defect as shown in the illustrations.

From time to time we hear a good deal about the rapidity of continental open-hearth practice as compared with our British works, and the big difference in output certainly looks formidable. One of the chief hindrances to progress in output is due to limitation of output practised by some firms. This does not compare well with the opposite aim or conduce to efficiency. We can find furnaces limited to six charges per week, the theory being that more charges would mean "hurriedly worked" and bad steel. The fact that a neighboring firm could tap, say, 11 casts per week with sound results should be, but is not sufficiently forcible, argument against the stand taken. Until the big difference existing in output is broken down our tonnage will not rise to that of continental works.

Domestic Coke Price

WASHINGTON, Aug. 6.—By an order of the United States Fuel Administration the maximum price per ton of 2000 lb. f.o.b. cars at the point where produced, for mixed sizes of properly screened and cleaned beehive or by-product coke suitable for domestic purposes will hereafter be $1 less than the maximum Government price for selected foundry coke f.o.b. cars at the same point. The production of domestic fuel by screening and cleaning the accumulated breeze piles at beehive and by-product coking plants has recently grown to such an extent that the United States Fuel Administration has found it necessary to establish a maximum price for the product.

The Birmingham Coke & By-Products Co. is the title of the corporation, which will at once build a large by-product plant at Boyle's on the outskirts of Birmingham, Ala. Morris Bush, president Shelby Iron Co., Imperial & Majestic Coal & Shelby Chemical Co., is president, and Horace Hammond, Hammond-Byrd Co. and associated with Mr. Bush in the above-named companies, is vice-president and treasurer. The Government will take a portion of the by-products for nitrate works at Sheffield and extend financial aid in building the plant, which will consume 1000 tons of coal per diam and produce 750 tons of coke.

Exports of Iron and Steel Show Decrease

Statistics Indicate Heavy Domestic Demand and Shipment by Transports Not Included in Customs Returns—The Fiscal Year's Record

WASHINGTON, Aug. 6.—What appears on its face to have been a decided slump in iron and steel exports during June is explained here by Government officials, who point out recent tendencies in the foreign movement and in the domestic distribution of both tonnage commodities and the more highly finished forms of iron and steel. The rapid development of the shipbuilding program and the no less marked expansion in heavy ordnance production have diverted under the new priority regulations large quantities of tonnage steel to domestic plants which otherwise would have gone abroad. Similar conditions have affected exports of machinery, especially plate-working and other machine tools. The shortage in the production of iron and steel which has recently become so acute has caused the export figures to respond quickly to all diversions for domestic use. The highly important factor that for several months has operated to reduce the recorded totals of iron and steel exports has been the steadily increasing proportion of shipments made on Government transports which are excluded from the customs returns. So far as the month of June is concerned, however, it is the best opinion here that, taking transport shipments into account, there was a net decline in exports, especially in tonnage commodities. A larger proportion of machinery and the more highly finished forms of iron and steel are now being shipped on transports than of the basic products, the bulk of which are going overseas through the regular trade channels.

The record for the fiscal year ending June 30, 1918, which shows a decline in exports of tonnage commodities accompanied by a gain in exports of machinery, has been fully foreshadowed by the developments of the past six months, during which the tendencies so markedly shown in June have been steadily accumulating. The chief element that has carried the 1918 totals below 1917 has been the introduction of the Government transport for the shipment of material, although during the last quarter the diversion of both commodities and machinery to domestic uses has been a factor of consequence.

The total exports of iron and steel by values in June declined 30 per cent from those of the corresponding month of 1917, which were but a fraction of 1 per cent below the record figures of last December. Tonnage commodities fell 33 per cent below June, 1917, and 35 per cent below the high water mark of December. Shipments of machinery, which held up well throughout the year, in June dropped 25 per cent below the level of the same month of 1917 and showed a loss of 30 per cent as compared with December's high record. Exports of metal-working machinery continued to decline, the total for June showing a loss of 52 per cent compared with the same month a year ago and of 58 per cent as against the high water mark reached in May, 1916. For the fiscal year 1918, exports of iron and steel by values very closely approximated the figures for 1917, showing a loss of but four-tenths of 1 per cent. The shipments of tonnage commodities in 1918 fell 16 per cent below the level of 1917, machinery gained 9 per cent over 1917, which was an advance of 44 per cent over 1916, while machine tools lost 31 per cent as compared with the 1917 record, which was 35 per cent above that of any previous year.

The value of the exports of all iron and steel products in June was $83,866,173, as compared with $119,141,836 for the same month of 1917 and $76,279,136 for June, 1916. For the fiscal year 1918, the aggregate was $1,125,889,371, as compared with $1,129,341,616 in 1917 and $621,237,972 in 1916. Exports of machinery in June were valued at $21,083,962, as compared with $27,946,036 for the same month a year ago. The record for exports of machinery is still held by December, 1917, with a total of $30,051,092. For the fiscal year 1918 the exports of machinery aggregated $288,273,034, as compared with $262,241,278 for the same period of 1917. Shipments of metal-working

Imports of Iron and Steel

	June		Fiscal Year	
	1917 Gross Tons	1918 Gross Tons	1917 Gross Tons	1918 Gross Tons
Ferromanganese	3,817	5,739	73,741	33,259
Ferrosilicon	869	146	8,715	5,419
All other pig iron	1,798	.....	35,795	16,098
Scrap	15,598	3,163	223,834	66,207
Bar iron	142	236	4,383	2,596
Structural iron and steel	94	154	1,020	7,281
Hoop and band iron	2	.....	26	.....
Steel billets without alloys	4,345	1,757	16,920	36,131
All other steel billets	624	560	11,097	9,513
Steel rails	970	400	14,067	8,285
Sheets and plates	139	53	1,866	2,098
Tin and terne plates	2	.....	612	32
Tin scrap	.....	397	.....	7,914
Wire rods	21	1,308	2,085	6,782
Total	28,421	13,913	395,161	201,715
Manganese, ore and oxide of	62,778	38,427	656,088	558,018

Exports of Iron and Steel

	June		Fiscal Year	
	1917 Gross tons	1918 Gross tons	1917 Gross tons	1918 Gross tons
Pig Iron	81,999	.....	833,523	.....
Ferromanganese	.....	*345	.....	*4,935
Ferrosilicon	.....	*35	.....	*8,599
All other pig iron	.....	*22,516	.....	*363,478
Scrap	9,692	318	237,801	22,385
Bar Iron	5,952	5,215	64,682	51,211
Wire rods	17,128	8,235	147,258	190,275
Steel bars	52,258	33,583	749,998	612,731
Billets, ingots and blooms, n.e.s.	192,133	139,377	1,936,252	1,970,831
Bolts and nuts	2,798	2,066	29,546	30,161
Hoops and bands	5,876	3,709	48,089	58,816
Horseshoes	256	160	4,278	9,089
Cut nails	359	514	4,610	5,209
Wire nails	9,824	5,470	124,681	109,380
All other nails, including tacks	2,934	1,023	19,447	13,139
Cast-iron pipes and fittings	6,915	2,867	75,385	79,205
Wrought pipes and fittings	16,072	8,795	169,472	102,014
Radiators and cast-iron house-heating boilers	1,014	250	4,901	2,874
Railroad spikes	2,278	1,049	19,106	15,549
Steel rails	42,078	25,069	602,065	430,347
Galvanized iron sheets and plates	7,735	7,730	52,586	79,618
All other iron sheets and plates	7,735	3,230	52,586	55,090
Steel plates	61,197	51,545	422,396	480,121
Steel sheets	20,316	12,766	127,964	176,820
Ship and tank plates, punched and shaped	.....	*3,354	.....	*34,951
Structural iron and steel	19,506	17,885	339,480	240,961
Tin and terne plates	25,460	30,553	232,949	251,827
Barb wire	17,369	22,922	303,203	184,874
All other wire	21,919	11,381	242,229	168,509
Total	631,712	421,963	6,885,543	5,757,825

*Not separately enumerated prior to July 1, 1917.

Exports of Machinery	June		Fiscal Year	
	1917	1918	1917	1918
Adding machines	$210,584	$193,774	$1,846,802	$2,080,596
Air-compressed machinery	109,396	267,039	1,135,661	1,808,973
Brewers' machinery	7,586	†4,255	65,365	241,940
Cash registers	102,728	83,425	1,387,258	562,813
Parts of	3,073	4,930	114,126	63,821
Concrete mixers	.....	*29,591	.....	*315,539
Cotton gins	12,796	5,986	115,005	131,666
Cream separators	60,467	72,217	499,034	634,466
Elevators and elevator machinery	260,232	104,581	2,220,689	1,908,373
Electric locomotives	18,227	7,730	527,034	161,641
Gas engines, stationary	80,909	26,682	718,101	562,733
Gasoline engines	2,769,473	1,127,922	18,954,625	33,517,163
Kerosene engines	.....	*572,005	.....	*6,180,349
Steam engines	3,538,825	867,926	20,760,625	38,935,928
All other engines	390,292	184,301	4,890,149	3,576,537
Parts of	1,886,004	.....	18,996,186	.....
Boilers	.....	*445,828	.....	*3,806,302
Boiler tubes	.....	*437,297	.....	*6,411,439
All other parts of engines	.....	*3,528,662	.....	*22,032,637
Excavating machinery	.....	*111,344	.....	*1,240,259
Milling machinery, flour and grist	90,768	177,921	1,132,834	1,125,243
Laundry machinery, power	78,584	74,647	392,559	422,046
All other	31,936	10,089	314,380	289,590
Lawn mowers	35,722	10,963	199,715	234,216
Metal-working machinery (including wood-working tools)	8,587,248	.....	84,935,410	.....
Lathes	.....	*921,934	.....	*15,588,901
Other machine tools	.....	*793,138	.....	*11,119,147
Sharpening and grinding machines	.....	*572,030	.....	*6,564,277
All other metal-working machinery	.....	*1,792,637	.....	*24,915,343
Meters, gas and water	68,325	47,121	429,659	477,615
Mining machinery, oil well	180,279	129,810	1,922,305	2,001,301
All other	1,115,107	468,671	10,124,013	10,171,409
Paper-mill machinery	124,549	138,539	1,839,570	1,911,622
Printing presses	209,289	113,660	1,899,786	1,349,833
Pumps and pumping machinery	537,319	497,618	6,134,611	6,554,188
Refrigerating and ice-making machinery	113,829	92,138	904,033	1,430,103
Road-making machinery	.....	*24,940	.....	*502,842
Sewing machines	806,561	578,766	6,536,862	7,793,718
Shoe machinery	139,161	122,791	1,365,364	1,519,641
Sugar-mill machinery	710,398	601,787	11,026,767	11,760,246
Textile machinery	353,475	572,808	3,548,278	5,505,148
Typesetting machines	149,593	185,116	1,161,873	1,304,977
Typewriting machines	1,062,004	575,696	11,162,423	7,480,714
Windmills	51,100	76,341	895,223	1,065,199
Wood-working machinery, saw mill	34,359	59,809	458,877	937,201
All other	72,704	147,796	985,998	1,022,052
All other machinery and parts of	1,943,134	3,175,101	42,640,036	41,053,287
Total	$27,946,036	$21,083,962	$262,241,278	$288,273,034

*Not separately enumerated prior to July 1, 1917.

machinery in June aggregated $4,079,739, as compared with $8,587,248 for the same month of 1917. For the fiscal year 1918, machine tool exports totaled $58,187,668, as compared with $84,935,410 for the same period of 1917. Details for the exports of machinery in June, 1917 and 1918, and for the two fiscal years are given in the accompanying table.

Exports for which quantities are given aggregated 421,963 gross tons in June, 1918, as compared with 631,712 tons for the same month of 1917 and 493,241 tons in May, 1918. The high record for this movement was made last December when the total was 656,044 gross tons. For the fiscal year 1918 these exports totaled 5,757,835 gross tons, as compared with 6,885,543 tons in 1917. The accompanying table shows the exports for June and for the fiscal years 1917 and 1918.

Imports of iron and steel in June, 1918, amounted to less than one-half those for the same month of 1917, the total being 13,913 gross tons as compared with 28,421 tons in 1917. This is a small loss as compared with May of the current year. The downward movement in imports, which has continued throughout the year, has brought the total for the 12 months to 201,715 gross tons as compared with 395,161 tons for 1917. Imports of iron and steel and of manganese for June and for the fiscal years of 1917 and 1918 are shown in the accompanying table.

W. L. C.

The United States Government has acquired several city blocks at Niagara Falls, N. Y., for the erection of workingmen's homes in accordance with its war housing program. At the outset, $1,650,000 will be expended. Construction will be commenced at once. Walter McCulloh, engineer in charge of the project is arranging for necessary, sewer, water and paving utilities.

The plant of the William D. Gibson Co., maker of flat and coiled springs of all descriptions, is now located at 1800 Clybourn Avenue, Chicago.

Sota & Aznar have opened an office in the Commercial Trust Building, Philadelphia, for the sale of iron ores in the United States.

"Mechanical Operators" Asked for, Not Machinists

WASHINGTON, Aug. 5.—A protest against the misuse of the term "machinist" and a suggestion that the terms "mechanical workers" or "mechanical operators" should be substituted in many cases in the discussion of employment problems have been made by Henry D. Sharpe of the Brown & Sharpe Mfg. Co., Providence, R. I. In a letter to the United States Employment Service Mr. Sharpe says:

"Every manufacturer knows that, generally speaking, there are practically no skilled machinists, or machinists worthy of the name, who are out of work. In every well-organized mechanical business there may be a thousand mechanical workers and few machinists. Recruiting of additional help in these industries must be the securing of additional mechanical operators.

"Accordingly, our suggestion is that the constant use of the word 'machinist' be eliminated—the Government and its serving industries already have recruited all the machinists available—and that emphasis be placed upon the need of additional 'mechanical workers' or 'mechanical operators.' An unskilled worker may be taught to become a mechanical operator with a minimum of training. To become a machinist, much more a skilled machinist, requires a length of time and experience which can not be secured, at least during war time.

"We are of the belief that the psychological effect of such advertising will be of decided benefit to the country. There are thousands of people who have never worked as operators of machines, who look upon becoming a 'machinist' as forbidding, whereas the use of the term 'mechanical operator' might interest them."

Mr. Sharpe's suggestion has been adopted by the Employment Service and will be followed in official bulletins made public hereafter.

The Massey Iron & Metal Co., 208 South Eutaw Street, Baltimore, has been incorporated with $1500 capital stock to deal in iron, steel and other metals. The incorporators are August V. Eidman, Alfred Johnson and Joseph M. Massey.

Machinery Markets and News of the Works

NEW WAR CONTRACTS

Pierce-Arrow to Make Airplane Motors

Government Supervision of Purchases More Searching—More Shell Orders Awarded—Midvale Cranes Bought

Government control of machine-tool and crane purchases is daily becoming more searching. The demand for equipment for shell making and the production of other war essentials continues without letup, and the Government is apparently taking an ever more prominent part in directing the buying and character of the machinery purchased to equip these plants.

The placing of more war contracts with manufacturers in the East is notable, and may be taken to indicate that the Government plans the full utilization of plants in that section that are now idle or on non-essential work.

The Pierce-Arrow Motor Car Co., Buffalo, N. Y., will reduce its output of pleasure cars and undertake the manufacture of Hispano-Suiza airplane motors on a large scale. The plans for converting its shop over to the new work are said to involve the purchase of several hundred machine tools. A production of 30 motors a day by Jan. 1, 1919, is expected, with an eventual output of 50 a day.

The United States Cast Iron Pipe & Foundry Co., Burlington, N. J., is reported to have been awarded a large contract for the manufacture of 6-in. cast semi-steel shells, for which turning operations on the exterior are called for.

The Laclede Gas Light Co., St. Louis, will equip a shell manufacturing plant to duplicate that under construction for the Scullin Steel Co., St. Louis, to have in each case a capacity of 300,000 150-mm. and 240-mm. shells per month.

Plant enlargement is being undertaken by the Lima Locomotive Works, Lima, Ohio, to increase its capacity from 30 locomotives to 50 a month. Henry Ford & Son, Dearborn, Mich., will enlarge their works to produce 150 tractors a day.

Some railroad buying is being done in the Middle West. The Nickel Plate is purchasing against its revised list issued originally in February. The Norfolk & Western Railroad has issued an inquiry for about 40 tools.

The only large crane order placed the past week was that by the Midvale Steel & Ordnance Co., which awarded contracts to the Morgan Engineering Co. and the Alliance Machine Co., both of Alliance, Ohio, for the large list for equipping its 16-in. howitzer plant. Other large crane lists are still pending, meanwhile pressure on crane builders is greater than ever.

New York

NEW YORK, Aug. 6.

New inquiries before dealers cover a variety of munition manufactures, such as trench mortar shells, airplane motors, illuminating projectiles, gunsights, etc. One of the largest specifications just out is that of the Pierce-Arrow Motor Car Co., Buffalo, N. Y., which will shift considerable of its capacity for the production of pleasure cars over to the manufacture of the Hispano-Suiza airplane motor. The purchase of several hundred machine tools for adapting its shops to the new line of work is anticipated. About 50 grinders are among the requirements. An output of 30 motors a day by Jan. 1, 1919, is planned, with an eventual increase to 50 a day.

The United States Cast Iron Pipe & Foundry Co., Burlington, N. J., is reported to have received a large contract for 6-in. cast semi-steel trench mortar shells for delivery over a long period. It is understood that the work is to be distributed between its plants at Burlington and in the South. Turning operations are called for on the outside of the shells.

The Midvale Steel & Ordnance Co., Philadelphia, is reported buying against the list of equipment for its 16-in. howitzer plant at Nicetown. The Savage Arms Corporation, Sharon, Pa., is buying additional tools for increasing its operations, and is now making alterations in its Isaac Sheppard & Sons' plant at Philadelphia, and its Defiance Mfg. Works at Somerdale, nearby.

A list of 64 machines has been put out by the Bureau of Supplies and Accounts for the Washington Navy Yard. It calls for 24 drill presses, 15 milling machines, 9 boring machines, etc.

The Otis Elevator Co., New York, has bought a considerable number of tools from the list recently issued for making recuperators for gun recoil mechanism at its Yonkers plant. The largest item specified was for 74 3-in. Jones & Lamson lathes. It is understood that in some cases purchases were not for the full extent of requirements as initially put out.

From 10 to 20 machines have been bought by the Downey Shipbuilding Corporation, 5 Nassau Street, New York, for the machine shop at its Staten Island yard. The Sun Shipbuilding Co., Chester, Pa., and the New York Shipbuilding Corporation, Camden, N. J., have also bought more shipyard shop tools.

Of the large amount of crane business outstanding, the only large letting was the award of the Midvale Steel & Ordnance Co., Nicetown, Philadelphia, of the cranes for its new howitzer plant in about equal share to the Morgan Engineering Co., and the Alliance Machine Co., both of Alliance, Ohio. One of the largest crane lists has been held two months without announcement of the successful bidder, a period that normally would not cover more than a fortnight. Changes in specifications called for by the engineering department in most of such cases is probably only one of the causes for delay. The closing of contracts for the 12 semi-portal bridge cranes for the Quartermaster Department stores at Boston is another example of delayed awards.

The Sun Shipbuilding Co., Chester, Pa., has bought six 15-ton and one 100-ton cranes for its new marine boiler works. The Barber Asphalt Paving Co. is reported about to let contracts for its similar needs. The Federal Shipbuilding Corporation has bought two 20-ton and three 10-ton cranes for its shipyard on Newark Bay. It has also placed contracts with a Philadelphia manufacturer for a large amount of hydraulic machinery.

Government departments are exerting an increasingly keener supervision over all machine-tool purchases financed by Government funds for the production of essential war supplies. Its scrutiny of priority applications for both machine-tools and cranes is also closer. While this adds to the interim labors and protracts the interval that usually elapses before awards are made, little complaint is heard except that at times there is a tendency to discount the opinions of those selling tools, who at the same time in many cases bring to the problem of equipping a plant an intimate knowledge of and long experience in shop needs.

The Matawan Steel & Iron Co., Matawan, N. J., operating a gray-iron foundry, has changed its name to the Wickham Co. of New Jersey.

The Scientific Ear Phone Co., New York, has been incorporated with a capital of $20,000 to manufacture ear-

phones and hearing equipment. C. J. Collins, G. A. Walker and B. Rabinewitz, 261 Broadway, are the incorporators.

The Snow-Whitcomb Co., Inc., New York, has been incorporated with a capital of $50,000 to manufacture electrical goods. W. L. Snow, 3661 Broadway; R. E. Whitcomb and J. H. Westcott, Jr., 605 West 151st Street, are the incorporators.

The Alexander C. Fyfe Co., Port Chester, N. Y., has been incorporated with a capital of $8,000 to operate a local machine shop. Alexander C. and E. Fyfe, and A. H. Hammerston, 234 West 104th Street, are the incorporators.

The Samuel Smith & Son Co., Paterson, N. J., manufacturer of steam boilers, tanks, etc., has increased its capital from $100,000 to $200,000.

The Utility Mfg. Co., Newark, N. J., has been incorporated with a capital of $125,000 by William B. and Patrick Dolan, Newark, and Joseph A. Donnelley, Belleville, to manufacture metal lid lifters, etc.

The National Lock Washer Co., 65 Johnson Street, Newark, N. J., has increased its capital from $100,000 to $200,000.

The Belmont Iron & Metal Co., Newark, N. J., has filed notice of organization to operate a works at 190 Belmont Avenue. Harry B. Schapiro heads the company.

The Buffalo Structural Steel Co., 166 Dart Street, Buffalo, has acquired property adjoining its works. The company, it is said, will not build immediately but plans eventually for the construction of an extension.

The Kennedy Valve Mfg. Co., Elmira, N. Y., manufacturer of valves, hydrants, etc., will build a one-story extension, about 35 x 65 ft., to cost $6,000.

Contract has been let for a two-story assembling plant, 50 x 100 ft., for the Brown, Lipe, Chapman Co., Syracuse, N. Y., to cost $25,000.

The Lionel Corporation, New York, has been incorporated with a capital of $50,000 to manufacture electrical toys. J. L. Cowen, A. T. Scharps and M. Frankel are the incorporators. The new organization, it is understood, will operate the Lionel Mfg. Co., 48 East Twenty-first Street, New York, with works on South Twenty-first Street, Newark, N. J.

The Atlantic Nail & Wire Co., New York, has been incorporated with a capital of $75,000 by N. S. Werling, C. Holmes and J. M. Marks, 2023 Seventh Avenue, to manufacture nails and wire specialties.

The Alrog Corporation, New York, has been incorporated with a capital of $17,000 to manufacture metal specialties for machine shop and factory use. C. Vos, S. Gade and D. Ross, 206 Canal Street, are the incorporators. The same incorporators have also organized the Aerogas Combustion Corporation, with a capital of $5,000, to manufacture gas appliances.

The American Gauge Mfg. Co., New York, has been incorporated with a capital of $50,000 by E. F. Hills, M. J. Moore and E. H. Smith, 68 Beaver Street.

Henry Hyman & Co., 77 Chambers Street, New York, manufacturers of metal goods, have increased their capital from $15,000 to $50,000.

M. Harrison & Son, Inc., New York, has been incorporated with a capital of $40,000 by C. Bender, J. McBurnie, 333 East Fifty-eighth Street, and M. Harrison, 110 West Eighty-fourth Street, to manufacture metal products.

The Serve Well Welding Corporation, New York, has been incorporated with a nominal capital of $5,000 to operate a welding works. H. Skliar and V. Platznan, 427 East 170th Street, are the incorporators.

The Edgewood Arsenal Co., Hastings, N. Y., has awarded contract to the Austin Co., Cleveland and New York, for three factory buildings, one 60 x 140 ft. and two 80 x 120 ft.

The Public Service Commission, New York, has granted the New York & Richmond Gas Co., 691 Bay Street, Stapleton, Staten Island, N. Y., permission to issue bonds for $500,000 for enlargement of its plant. The total issue allows $2,000,000, of which $1,500,000 will be used for refunding outstanding bonds.

MacGovern & Co., 114 Liberty Street, New York, machinery dealers, have increased their capital from $250,000 to $450,000.

The Government is making surveys of property near Pennsgrove, N. J., consisting of about 2700 acres of land for the establishment of a new ordnance plant. It is understood that the proposed site will be purchased at an early date and that plans are under way for the plant.

The Bureau of Yards and Docks, Navy Department, Washington, has commenced excavations for the construction of 10 magazine buildings at Lake Denmark, N. J., to cost about $300,000. The structures will each be two-story, 50 x 190 ft.

Fire, July 29, destroyed the plant of the Montville Finishing Co., Montville, near Boonton, N. J., including considerable textile and cloth printing machinery, with total loss estimated at $75,000. William Booth is president.

The Owens Bottle Machine Co., Toledo, Ohio, has acquired the plant of the Whitney Glass Works, Glassboro, N. J., for about $670,000. The plant has been specializing in the manufacture of bottles, vials, etc., giving employment to about 300 persons.

The Erie Railroad Co., Jersey City, N. J., has filed plans for the erection of a one-story addition to the forge and blacksmith shop at its Provost Street yards to cost about $30,000.

A section of the machine shop and assembling department of the Mersereau Metal Bed Co., 292 Johnston Avenue, Jersey City, N. J., was destroyed by fire, July 29, with loss of about $5,000.

A five-story, brick and concrete cooperage plant to cost $125,000, will be erected by Swift & Co., 154 Ninth Street, Jersey City, N. J., at 209-215 Tenth Street.

The Railroad Administration is reported to be considering the construction of a new railroad car yard, including shop and repair works, etc., at Hoboken, N. J., to cost about $1,000,000. Col. M. B. Gunby, Seventh and B streets, S. W., Washington, is advisory engineer.

The Lovell-McConnell Mfg. Co., 194 Wright Street, Newark, N. J., manufacturer of automobile horns, has acquired an entire block bounded by Wright and Miller streets, and avenues A and B, about 200 x 700 ft., and will use the plot for an extension to its works. Duncan A. McConnell is president.

The factory to be erected by Anton Louy & Co., 511 West Twenty-first Street, New York, manufacturer of marine plumbing equipment, will be located at 517 West Twenty-first Street, adjoining the present works. It will be five-story, 50 x 90 ft., and cost $50,000.

The Barling Shipbuilding Co., Brooklyn, has been incorporated with a capital of $100,000 by C. A. Barling, P. Svendsen and E. A. Trik, 205 Seventy-first Street, Brooklyn.

The Oceanic Steel Corporation, New York, has been incorporated with capital of $250,000 to manufacture steel products. John W. McKay and Gorham Tufts, Jr., New York; and Issac W. Ullman, Brooklyn, are the incorporators.

Fire, Aug. 1, caused a loss estimated at $200,000 to the rope and twine manufacturing plant of George W. Millar & Co., 284-290 Lafayette Street, New York. The company was recently incorporated with a capital of $1,000,000.

The Vacuum Cleaner Specialty Co., New York, has been incorporated with a capital of $100,000 by H. W. Kappele, 368 Haven Avenue, New York; H. C. Hall, 181 Park Place, Brooklyn; and J. P. McGrath, Union Hill, N. J.

Bids for two new electric-operated pumping units for the municipal water-works will be received by the board of aldermen, Boonton, N. J., until 8 p. m., Aug. 14. The pumps will be of centrifugal type, direct connected, 2-in. and 4-in. respectively. Frank Hammond is mayor; Clyde Potts, 30 Church Street, New York, engineer.

Buffalo

BUFFALO, Aug. 5.

The American Purchase Sales Co., 528 Ellicott Square Building, Buffalo, will add a boiler house, a pump house, and a still house to its new oil compounding plant at West Genesee Street, the Erie Canal and the New York Central Railroad.

The Brockway Motor Co., Cortland, N. Y., George Brockway, president, will build a one-story addition, 50 x 200 ft., of cement block construction.

Permit has been issued for the erection of a forge building, 80 x 245 ft., of steel frame construction, to Albert J. Howard, Norfolk and Northumberland avenues, and the Lackawanna Railroad, Buffalo, for the manufacture of steel forgings for Government work.

The Handy Oil Co., Buffalo, capitalized at $75,000, has filed a certificate of incorporation and will establish a plant for the compounding of oil specialties. Its directors are Arthur E. Francis, Leon W. DuFlon and William O. Shields, Morgan Building, Buffalo.

The Catchpole Boiler Works, Geneva, N. Y., has had plans prepared for foundry addition, 30 x 87 ft.

Plans are being prepared for a one and two-story addition to the factory of Pass & Seymour, Solvay, N. Y.

The Binghamton Bridge Co., Binghamton, N. Y., C. S. Mallory, president, has purchased a site at Port Dick, where it will construct a concrete dam and build a hydroelectric plant, with one-story brick powerhouse, and install water wheels, turbines and generators of about 500 hp.

The Deyo Motor Truck Corporation, 23 Washington Street, Binghamton, N. Y., has let contract for two-story shop addition, 43 x 100 ft.

The Air Reduction Co., 120 Broadway, New York, has acquired property on Grant Street, Buffalo, for the construction of a new plant. The site has a frontage of about 184 ft., extending to the New York Central Railroad.

The U. S. Light & Heat Corporation, 3215 Highland Avenue, Niagara Falls, N. Y., manufacturer of lighting and heating specialties, will build an addition to cost $40,000.

The American Locomotive Co., Schenectady, N. Y., has awarded a contract to the Lackawanna Bridge Co., Buffalo, for the construction of a brick and steel addition to the boiler shop of its locomotive works at Dunkirk, N. Y. The new shop will cost about $150,000.

The Atlas Crucible Steel Co., Dunkirk, N. Y., has taken over the Chautauqua Wire Co. and will merge the company with its organization. The company will commence the operation of a new plant about Sept. 1, for this end of the business, having acquired the factory of the Dunston Lithograph Co., Lucas Avenue, for this extension. Machinery is now being installed at the new works.

The Willys-Morrow Co., Toledo, Ohio, has awarded a contract to the Lomman Construction Co., Elmira, N. Y., for a one-story power plant, 25 x 105 ft., at its aircraft plant, South Main Street, Elmira, to cost about $30,000. Plans are also being prepared for a two-story building, 60 x 120 ft., to cost $20,000, to be equipped for a drafting department.

The Vacuum Plug Corporation, Buffalo, has been incorporated with a capital of $50,000 by M. White, M. I. Joice and V. J. Hoyt.

New England

BOSTON, Aug. 5.

The Westwood Mfg. Co., Plainville, Conn., has been incorporated with authorized capital stock of $50,000 to manufacture iron and brass castings. It will commence business with actual capital of $1,050. The incorporators are Fred C. Prelle and Jason M. Barrett, New Britain, and Horace K. Lovell, Plainville.

The United States Government has commandeered the tract of land at Exchange and Union streets, Worcester, Mass., now occupied by the William H. Sawyer Lumber Co., and has ordered it to be vacated within seven days. It is reported that it is the intention of the Government to erect within 30 days a shell-making plant to cost approximately $1,000,000.

The Walworth Mfg. Co., Boston, has awarded to Gascoigne & Goddard, Inc., a contract to build an addition, 30 x 40 ft., one story.

The United States Government has taken over the control of the plant of the Peck, Stow & Wilcox Co., Southington, Conn. It has been doing about 85 per cent Government work and employs 800 hands. It will be operated on an 8-hr. basis with time and one-half for overtime.

The Brown & Sharpe Mfg. Co., Providence, R. I., has awarded to William H. Hamlyn & Son a contract for an addition, 64 x 175 ft., two stories.

The Bay State Foundry Co., Westfield, Mass., has awarded to George H. Stevenson a contract for an addition, 20 x 60 ft., one story.

Landers, Frary & Clark, New Britain, Conn., are to build an addition, 8 x 27 ft., and other alterations to its iron foundry; an addition, 16 x 40 ft., and two monitors, 15 x 60 ft., to its temporary room and aluminum building, and an extension, 17 x 25 ft., to its japanning room.

The Hendee Mfg. Co., Springfield, Mass., is asking bids on an addition, 60 x 81 ft., one story, for a hardening room and other purposes; and a boiler house, 40 x 71 ft.

The Textile Finishing Co., Providence, R. I., has awarded a contract to the Charles B. Maguire Co. for a two-story machine shop.

The Spencer Turbine Co. and the Organ Power Co., Hartford, Conn., have awarded to R. G. Bent & Co. a contract for a factory on New Park Avenue, 77 x 300 ft., one and two stories.

The New York, New Haven & Hartford Railroad Co., New Haven, Conn., has begun the erection of a machine shop at Ferry Street and Middletown Avenue, 43 x 68 ft., one story.

Manning, Maxwell & Moore, Inc., New York, have awarded to the Austin Co., Cleveland, a contract for an addition, 200 x 220 ft., one story, at its plant at Fitchburg, Mass.

Howard Everts, 15 Forest Street, Hartford, Conn., has awarded to O. E. Stenson a contract for a machine shop at 77 Francis Avenue, 40 x 114 ft., one story.

Philadelphia

PHILADELPHIA, Aug. 5.

The Midvale Steel & Ordnance Co., Widener Building, Philadelphia, has awarded contract to the McClintic-Marshall Co., Morris Building, for the construction of three new brick, steel and reinforced-concrete additions to its plant at Nicetown. The new buildings will consist of a one-story heat-treatment plant, 74 x 460 ft.; one-story machine shop, 114 x 482 ft., for rough machine work; and one-story machine shop, 183 x 562 ft., for finishing operations. A crane runway will also be constructed.

The Edward G. Budd Mfg. Co., Twenty-fifth Street and Hunting Park Avenue, Philadelphia, manufacturer of steel automobile bodies, etc., has awarded contract to Barclay White & Co., 1713 Sansom Street, for a one-story addition, 70 x 125 ft., to cost $25,000.

The Hall Gas Engine Co., 4825 Gardner Street, Philadelphia, manufacturer of gas and gasoline engines, has awarded contract to E. E. Hollenback, 1804 Brandywine Street, for a one-story machine shop, 30 x 40 ft.

The Richard De Cou Co., Twelfth and Noble streets, Philadelphia, manufacturer of structural iron shapes, is considering the construction of a one-story foundry to cost $30,000.

Arthur H. Burton, Philadelphia, has acquired a machine shop at 1015-29 Hamilton Street. It is understood that the structure with adjoining factory will be used for machine repair work, etc. The property has an assessed valuation of $55,000.

The Southwark Foundry & Machine Co., 430 Washington Avenue, Philadelphia, specializing in the manufacture of traction engines and kindred products, has broken ground for a new one-story brick machine shop and foundry on Fourth Street, 55 x 135 ft., to cost $45,000.

The Baldwin Locomotive Works, Broad and Spring Garden streets, Philadelphia, has filed plans for an addition to its machine shop at Hamilton and Seventeenth streets, to cost $6,000.

The Haas Automobile & Supply Co., 4303 North Fifteenth Street, Philadelphia, manufacturer of automobile specialties, has awarded contract to John Roman, 4521 Pulaski Street, for a one and three-story factory and office addition on North Broad Street. The work will include the extension of the present building to a size 20 x 100 ft., a three-story addition, 20 x 20 ft., and one-story addition, 20 x 50 ft.

A new one-story boiler plant, 60 x 95 ft., will be constructed by the Atlantic Refining Co., Philadelphia, at its works, Passyunk Avenue and the Schuylkill River.

The Elisha Webb & Son Co., Philadelphia, operating a ship chandlery works at 136 South Front Street, has awarded a contract to E. E. Hollenback, 1804 Brandywine Street, for a one-story sheet-metal working shop, 40 x 100 ft., at 1021-23 East Columbia Avenue, to cost about $8,200.

The Philadelphia Electric Co., Philadelphia, has made application to the Government for permission to arrange a loan of $20,000,000 or twice the amount recently granted by the Shipping Board. The appropriation will be used for the construction and extension of power plants and system to supply service to the Hog Island shipyard and other points. The company plans for extensive operations in the northern Delaware district.

The Pyrolectric Instrument Co., Trenton, N. J., has removed its plant from 148 East State Street to 636 East State Street to provide for increased operations. The company specializes in the manufacture of electric furnaces, and at the new location will manufacture units up to 20 kw. capacity for use in metal industries and laboratory work. The company will also manufacture electric pyrometers and other electric precision instruments.

The Economy Engineering Co., Camden, N. J., has been incorporated with a capital of $100,000 to manufacture tools and machinery. Hugh V. Ramsay and William B. Grover, Gloucester City; and V. H. Tripp, Philadelphia, are the incorporators.

The New York Shipbuilding Corporation, Camden, N. J., has filed plans for a one-story addition, 50 x 112 ft., at Broadway and Fairview streets. The company has commenced the erection of a two-story addition, 40 x 60 ft., for office use, to cost about $68,000.

The Port of Philadelphia Dry Dock Co., Camden, N. J., recently incorporated, has made application to the Capital Issues Committee for permission to build a drydock and ship repair works at Gloucester, N. J., 70 x 700 ft., to be supplemented by a floating drydock to accommodate vessels

of from 6000 to 8000 tons rating. An extensive repair plant is to be erected for ship construction and repair work. The plant, it is said, will cost over $3,000,000. It will be located on the Gloucester beach front extending from the Gloucester ferry, Third Street, to Sixth Street. The site comprises about 30 acres with water frontage of over 1000 ft. Louis Starr and Joseph J. Summerill, Woodberry; and John R. B. Nixon, Bridgeton, are the incorporators.

The Philadelphia & Reading Railroad, Reading Terminal, Philadelphia, has awarded a contract to the Robert E. Lamb Co., 841 North Nineteenth Street, for the construction of a new machine shop, engine house, power plant, and other buildings at its Darby Creek yards, Essington, Pa., to cost about $100,000. The machine shop will be one-story, 25 x 60 ft.; the engine house, 70 x 200 ft., and power plant, 25 x 60 ft. A new pumping plant and 100-ft. turntable will also be erected. The company will also build several new structures at its Saucon Creek yards, South Bethlehem, to include a one-story machine shop, 20 x 110 ft., and engine house, 100 x 200 ft.

James F. Griffith, 420 Moyer Street, Philadelphia, operating a metal works, will build a one-story brick machine shop, 32 x 100 ft.

The Newton Machine Tool Works, Twenty-third and Vine streets, Philadelphia, has filed plans for alterations and extensions in its machine shop to cost $12,375.

The William & Harvey Rowland Co., Tacony and Lewis streets, Philadelphia, manufacturer of steel springs, has had plans prepared for rebuilding its one-story plant, 100 x 175 ft., partially destroyed by fire recently with loss estimated at $20,000.

A new one-story shop, 48 x 90 ft., for repair operations, will be constructed by Furness Withy & Co., Ltd., steamship owners and agent, Philadelphia, at Cambria and Milvale streets.

A building permit has been taken out by the Savage Arms Corporation, Utica, N. Y., for remodeling the machine shop and pattern shop at Sepviva Street and Erie Avenue, Philadelphia, recently acquired for a new works from the Isaac A. Sheppard Co. The improvements will cost about $14,900.

The Connecting Railway Co., Philadelphia, has acquired the plant of the Fite & Arbelo Co., Twenty-first Street and Glenwood Avenue, for about $95,000. The works has a manufacturing area of over 69,000 sq. ft.

The Air Reduction Co., 120 Broadway, New York, is considering the erection of a new works at Germantown and Sedgley avenues, Philadelphia.

Edwin A. Moore, Reading, Pa., operating a foundry on Robeson Street, is building a one-story addition, 35 x 80 ft.

The J. A. Rupp Paper Co., 25 South Eighth Street, Allentown, Pa., will install new machinery, including roll slitters, power cutting machines, etc., at its new building to be erected at 355-57 Hamilton Street. The structure will be four stories, estimated to cost $50,000.

The Traylor Shipbuilding Corporation, Cornwells, Pa., is negotiating with the Emergency Fleet Corporation for the installation of a new air compressor system, including boilers, air compressors, etc., at its shipbuilding plant, to be used for the operation of air hammers, boring machines, and other equipment.

The Williamsport Wire Rope Co., Williamsport, Pa., has awarded a contract to the Austin Co., Bulletin Building, Philadelphia, for a one-story addition, 90 x 200 ft., to cost $40,000.

Baltimore

BALTIMORE, Aug. 5.

The Ordnance Department, Washington, has awarded contract to the Hughes-Foulkrod Co., Commonwealth Building, Philadelphia, for the construction of 10 brick and steel buildings, each one-story, 100 x 200 ft., for a new ordnance works at the Edgewood Arsenal, Edgewood, Md. The Austin Co., Baltimore Building, Philadelphia, recently received the contract for foundation work. The buildings alone will cost $500,000, the entire plant about $5,000,000.

The Baltimore Mfg. Co., Baltimore, has awarded contract for six concrete factory buildings to D. L. Shepard, Cornhill Street, Boston, Mass., to cost about $500,000.

The Crescent Patent Co., Wilmington, Del., has been incorporated with a capital of $10,000 to manufacture machinists' tools. M. E. Doto, Artemus Smith and J. H. Ayers, Wilmington, are the incorporators.

The Bureau of Yards and Docks, Washington, is taking bids for the installation of new ash-handling machinery at the Government works, Annapolis, Md., to cost about $16,000.

The American Cellulose & Chemical Mfg. Co., Ltd., Cumberland, Md., has awarded a contract to the George A. Fuller Co., 175 Fifth Avenue, New York, for the construction of its proposed local plant. It is planned to construct two units, each estimated to cost $5,000,000.

The Wheeling Mold & Foundry Co., Wheeling, W. Va., has equipped its Manchester works for the manufacture of large shells, and plans for the immediate operation of the plant at full capacity, interrupted by the installation of new machinery, will be put under way.

The Cole Mfg. Co., Charlotte, N. C., manufacturer of agricultural machinery, will build a one-story pattern shop, 30 x 60 ft., and one-story wood-working plant.

The American Agricultural Chemical Co., 2 Rector street, New York, is planning the rebuilding of its nitrate works, near Jacksonville, Fla., recently damaged by fire.

The Anclote Shipbuilding Co., Tarpon Springs, Fla., recently incorporated, has completed plans for its proposed works on the Anclote River for building schooners. The company is planning the immediaate installation of machine shop equipment, wood-working machinery, etc. M. B. Cheesman is engineer.

The National Steel Products Co., Bessemer, Ala., recently reorganized with capital increase from $50,000 to $150,000, has acquired about five acres on First Avenue, between Tenth and Twelfth streets, as a site for a new plant, to specialize on the production of rail devices, and operate a foundry for the manufacture of steel castings. W. J. Long is president.

The Armor Iron & Steel Co., Birmingham, Ala., a Delaware corporation, has filed notice of change in company name to the Birmingham Steel Corporation, with increase of capital from $250,000 to $1,000,000. The reorganized company has acquired a local site and plans the erection of a steel fabricating plant to specialize in the production of steel shapes for ship construction. This output will be utilized at the plant of the Mobile Shipbuilding Co., Mobile, with which the company is associated. George D. Brittain, secretary-treasurer of the Mobile Shipbuilding Co., is treasurer of the new company.

The Crown Cork & Seal Co., 1511 Guilford Avenue, Baltimore, has received a large contract from the Government for the manufacture of cartridges. John M. Hood, Jr., president, announces that the five-story building being constructed at Highlandtown, Md., and which comprises about 150,000 sq. ft. of floor space, will be used exclusively for the work.

The blacksmith and wheelwright shop of Williams & Bradford, Snow Hill, Md., recently damaged by fire, will be rebuilt.

The Berkeley Machine Works, Norfolk, Va., has increased its capital stock from $75,000 to $120,000.

The Pulaski Foundry & Mfg. Co., Pulaski, Va., has increased its capital stock from $50,000 to $100,000.

The Domestic Heating Co., Williamsburg, Va., has been incorporated with $50,000 capital stock. G. H. Newbury, Richmond, Va., is president.

The Cole Mfg. Co., Charlotte, N. C., manufacturer of farm machinery, plans the construction of a wood-working shop, 90 x 20 ft., and a pattern building, 60 x 30 ft.

Chicago

CHICAGO, Aug. 5.

Acting under a misapprehension, or applying too strict an interpretation of a Government rule against middlemen, one or two army purchasing officers have shown a tendency to discriminate against legitimate machinery dealers whose principal business is acting as direct selling agents for machine-tool builders. Officials in Washington have been asked to give a ruling in the matter and it is probable that no serious results to the "dealers" will follow. The so-called dealers to whom reference is made have exclusive selling privileges in their territories and have expensive selling organizations which their principals would otherwise have to maintain at even greater cost. The intention of the Government is unquestionably to eliminate those middlemen who perform no useful function.

In giving estimates on tools required by railroads, sellers are informed they must guarantee that no bonuses or commissions are paid to third parties. The Illinois Central has yet to close against several tools, and lists issued by the Chicago, Milwaukee & St. Paul and the Santa Fe await action.

The Wisconsin Gun Co., Milwaukee, has purchased equipment to double its capacity.

McCord & Co., West Pullman, Ill., are manufacturing aerial bombs.

The machine-tool trade, without exception, reports that July was an excellent month in point of volume of sales. With some sellers it came near being a record breaker. Others would have done better had they not lost sales on account of far-off delivery.

New Government work is responsible for a building increase of 16.21 per cent in Chicago in July, the month being the first to show a gain over 1917. There was a loss in the number of permits granted, but a gain in both frontage and estimated cost of building. Permits were issued for 292 buildings at an aggregate estimated cost of $4,885,600, against 321 buildings at a cost of $4,204,100 in July, 1917. The showing is largely due to Government activity in connection with the big shell plant of the Symington-Chicago Corporation. It is expected that the plant will begin operations Dec. 1. To handle the thousands of employees, the Government will build a street car line to connect with existing lines.

The United States Government has purchased 154,000 sq. ft. in Thirty-ninth Street, between Hoyne and Seeley avenues, Chicago, upon which it will erect a cold storage plant which, with the land, will represent an investment of $3,000,000. The site is in the Central Manufacturing District. The machinery and ice-plant building will be 140 x 140 ft., two stories and basement.

The Master Trucks, Inc., 3132 South Wabash Avenue, Chicago, has purchased a site, 120 x 500 ft., on the south side of the city where a manufacturing plant will be erected to house all its departments. It manufactures two types of trucks and a tractor.

The Goodman Mfg. Co., 914 South Wabash Avenue, Chicago, has been granted a permit for the construction of a one-story boiler house addition, 25 x 35 ft., and a chimney stack, 6.6 ft. in dia. and 175 ft. high, to cost $5,000.

The Iroquois Iron Co., South Chicago, has been granted a permit for the construction of a one-story machine shop, 56 x 66 ft., to cost $17,000. C. D. Rawstorne, 122 South Michigan Avenue, Chicago, is the architect.

The Cribben & Sexton Co., 680 North Sacramento Boulevard, Chicago, manufacturer of stoves, is taking bids on the equipment required to turn out 2000 155-mm. shells per day, but it is not stated that the company has actually obtained a contract.

The general contract has been let for a one-story factory, 60 x 160 ft., to be erected for the Maremont Mfg. Co., wagon builder, at 910 South Wabash Avenue, Chicago, at a cost of $24,000.

The general contract has been awarded for alterations and a one-story factory, 57 x 200 ft., at South Central Avenue and Taylor Street, Chicago, to cost $30,000 for Templeton Kelny & Co., Ltd., manufacturer of railroad supplies.

A two-story factory, 131 x 261 ft., is to be erected at La Salle, Ill., for the Mathiessen & Hegeler Zinc Co. The general contract has been awarded to E. L. Archibald & Co., 111 West Washington Street, Chicago. It will cost $150,000.

The Schwinn Foundry & Machine Co., 527 Bank & Insurance Building, Dubuque, Iowa, according to announcement recently made, will establish a plant for general foundry and machine work at East Dubuque, Ill. The company has a capital stock of $75,000. Philip Schwinn is president and William V. Teopel, secretary and treasurer.

The Dependable Truck & Tractor Co., with offices in the Galesburg Bank Building, Galesburg, Ill., is planning to establish a factory in that city for the manufacture of several types of trucks. C. V. Morse is president and chief engineer, and J. J. Welsh, secretary and treasurer.

The Independent Pneumatic Tool Co., 1307 South Michigan Avenue, Chicago, has leased the sixth floor in the Otis Elevator Building, 600 West Jackson Boulevard, containing 12,000 sq. ft. of floor space, which it will occupy about Sept. 1 for general offices. John D. Hurley, president, states that the great demand for its products has forced the company to double its quarters.

The Master Trucks, Inc., South Wabash Avenue, Chicago, is having preliminary plans prepared for the erection of a new works, 120 x 500 ft. It has acquired property in the South Side district.

The National Refrigerator Car Co., Chicago, a Delaware corporation, has increased its capital from $30,000 to $2,500,000.

Swift & Co., Union Stock Yards, Chicago, will build a new one-story and basement boiler plant, 65 x 85 ft., to cost $18,000. It will also erect a similar plant, 35 x 50 ft., on Muskegon Avenue, Milwaukee, to cost about $30,000.

The Midland Structural Steel Co., North Hoyne Avenue, Chicago, is building a new plant, about 75 x 85 ft., and 26 x 26 ft., at Cicero, Ill., to cost $12,000.

The Henry Pratt Co., Chicago, will remodel and build an extension to its machine shop on South Halsted Street, 50 x 120 ft., to cost $6,000.

The Chicago & Eastern Illinois Railroad Co., Chicago, is building a one-story addition to its car repair shop at Yard Center, Ill., to cost about $8,000.

Milwaukee

MILWAUKEE, Aug. 5.

The trend of the machine-tool demand is gradually changing from the heavier to the lighter types of machines, due largely to increasing requirements resulting from the conversion of industries for Government work. This is particularly noticeable in milling machines, the demand for which in the last six months has been largely for the heavy tools.

While inquiries continue for lots of milling and other tools in considerable quantities, no large-lot business has been placed so far. The demand, however, for small lots and single tools is maintained with unusual consistency, totaling a relatively enormous size and keeping plants filled up for a long time ahead. While the slight lull in June made it possible to make some headway on deliveries, this affected only certain types, the demand for which has since made conditions about as unfavorable as before.

Crane builders report no let-up in orders; in fact, new business is coming in even larger volume than before. Pressure upon these shops is greater than it has ever been.

Foundry extension, especially in the electric steel casting trade, continues broad.

The Milwaukee Steel Foundry Co., 101-121 South Water Street, Milwaukee, operating a converter plant with a capacity of 400 tons a month, has completed arrangements for the construction of an electric steel unit as an addition to the existing works, which with other new buildings will involve an investment exceeding $125,000. The new foundry will be 100 x 125 ft., of reinforced concrete, steel and brick, and is being designed by the Dahlman Construction Co., 908 Majestic Building, which has also taken the general contract for the work. A new pattern shop and storage building, 35 x 80 ft., four stories and basement, and office building, 40 x 55 ft., two stories and basement, are included in the plans. Most of the equipment has been purchased. Burton C. Wait is president and general manager.

The Winther Motor Truck Co., Kenosha, Wis., has awarded the contract for designing and erecting its new plant, 150 x 350 ft., to the Wisconsin Bridge & Iron Co., North Milwaukee. It will cost about $150,000 with complete equipment, and is expected to be ready for occupancy early in October. The company is operating in leased quarters at Winthrop Harbor, Ill., and the machinery and tools will be transferred to Kenosha upon completion of the new works. A fair-sized list of tools is now being purchased, but the bulk of requirements has been placed. Martin P. Winther is president and general manager.

The Western Malleables Co., Beaver Dam, Wis., has resumed the operation of its South Street works, which for the present will be employed exclusively in the production of a Government order for castings.

The Racine Mfg. Co., Racine, Wis., manufacturer of sheet metal automobile bodies, has accepted a contract for building 500 metallic lifeboats, fully equipped, for the Emergency Fleet Corporation, which will require utilization of from 25 to 30 per cent of the facilities for several months to come. Deliveries on the order are to begin September 1.

The Green Bay Wire Works, Green Bay, Wis., has been incorporated by Green Bay and Appleton capital to manufacture wire screens and wire cloth for paper and pulp mills. Factory quarters have been leased and are being equipped. The new concern has a capital stock of $30,000. Its officers are: President, A. W. Priest; vice-president, C. E. Maeser; secretary and treasurer, T. E. Fox.

The Hamilton-Beach Mfg. Co., Racine, Wis., manufacturer of small electric motors and motor-driven devices and appliances, has awarded contracts for the construction of a three-story factory and warehouse addition, 80 x 150 ft., costing about $50,000 complete. A. F. Flegel, Racine, is architect and engineer.

The Allis-Chalmers Mfg. Co., Milwaukee, has engaged Klug & Smith, consulting engineers, Mack Block, to prepare plans and specifications and supervise remodeling and enlarging the power plant at its Bullock works in Norwood, Cincinnati, Ohio.

The Northern Wood Products Co., Glidden, Wis., manufacturing tool handles, broom stocks and similar hardwood

goods, will rebuild immediately the factory and power plant nearly destroyed by fire 10 days ago. The estimated cost is $35,000. W. A. Thomas is general manager.

The Wisconsin Duplex Automobile Co., Oshkosh, Wis., on Aug. 1 began the production of a 1½-ton commercial car which it has been developing the past year. Within four or five months the company expects to be able to manufacture the car in groups of 25. It has orders to keep its plant running at capacity until early next year.

Detroit

DETROIT, Aug. 5.

Miscellaneous orders for machine tools are beginning to come into prominence for the first time in months and as a result the market is considerably above normal. Buying for munitions continues very strong with two large contracts which cannot be specified, placed with dealers.

Railroad deliveries of small shipments have improved noticeably.

Among Michigan concerns to receive Government contracts are the following: American Lubricator Co., Detroit, steam lubricators; Gray Motor Co., Detroit, motor engines and spare parts for gasoline engines; Studebaker Corporation, Detroit, automobile spare parts; W. H. Anderson Tool & Supply Co., Detroit, molders; United States Graphite Co., Saginaw, graphite compound; Industrial Works, Bay City, locomotive cranes; Lufkin Rule Co., Saginaw, steel scales, steel tape, tape repair outfits; Fenn Mfg. Co., Charlotte, snathes; Edwards & Chamberlain Hardware Co., Kalamazoo, nails; Ford Motor Co., Detroit, ambulances and parts for searchlight carriages; American Logging Tool Co., Evart, timber carriers; Penberthy Injector Co., Detroit, automatic injectors; Detroit Graphite Co., Detroit, paint; Dodge Brothers, Detroit, parts for Dodge cars; Packard Motor Car Co., Detroit, trucks; General Motors Truck Co., Pontiac, Motor ambulance parts.

The Anderson Electric Car Co., Detroit, has let contracts for a two-story addition to its plant at Clay Avenue and Riopelle Street.

The Michigan Steel Castings Co., Detroit, has let contracts for an addition to its factory and foundry.

The Paige-Detroit Motor Car Co., Detroit, has let contracts for a three-story addition to its factory.

Nelson, Baker & Co., Detroit, has let contracts for a two-story addition.

The Stroh Castings Co., Detroit, will build an addition to its foundry.

The Wolverine Tube Co., Detroit, will build a one-story addition.

The Timken Detroit Axle Co., Detroit, has let contracts for an addition to its Clark Avenue plant.

The General Aluminum & Brass Mfg. Co., Detroit, has awarded contracts for the erection of a two-story building with core ovens, 100 x 100 ft.; brass furnace building, 60 x 100 ft.; machine shop, 60 x 140 ft., and a vacuum steam heating plant.

The Motors Metal Mfg. Co., Detroit, has awarded contracts for the construction of two units, 60 x 200 ft. and 50 x 60 ft., as additions to its plant.

The Oakland Motor Car Co., Pontiac, Mich., announces that for the duration of the war it will devote most of its capacity to making trucks. The company has been making passenger cars only, averaging between 15,000 and 20,000 annually in the last few years. The new truck will be a one-ton model with several new features. It is expected that production will start in about 90 days. Materials are being gathered.

The Steel Treating Equipment Co., Detroit, has let contracts for an addition to its factory at Lafayette Boulevard and the Michigan Central Railroad.

The General Motors Corporation, Detroit, will erect in Saginaw, Mich., a new foundry for the production of automobile castings. The first unit will comprise a main building, 163 x 440 ft.; core building, 100 x 400 ft.; cleaning room, 110 x 265 ft.; pattern shop and storage, 100 x 120 ft., with sand storage buildings and a power house. The cost will be about $1,100,000, and additional units will be added later. Frank D. Chase, Inc., Peoples Gas Building, Chicago, is the engineer.

The Transport Truck Co., Mount Pleasant, Mich., recently incorporated with a capital of $1,000,000, is considering the erection of a new plant consisting of two one-story buildings, each about 75 x 700 ft. Milton A. Holmes is president.

The Detroit Foundry Co., East Grand Boulevard, Detroit, will make improvements and alterations in its foundry to cost about $10,000.

Cleveland

CLEVELAND, Aug. 6.

After a falling off in demand the machinery market is again very active. There is a heavy call for single and small lots of tools for shipyards, ordnance and gun carriage work, and from motor truck and crane builders. The White Co., Cleveland, is increasing the capacity of its plant for building Government motor trucks and is buying considerable machinery. A number of inquiries have come from Pacific Coast shipyards for large planers, lathes and vertical boring machines for quick delivery. The American Shipbuilding Co. is still adding to its equipment, having purchased the past week a 36 and 42-in. lathe. The Nickel Plate Railroad has revised a list issued last February and is purchasing a round lot of metal-working and wood-working tools. The Wisconsin Gun Co., Madison, Wis., is buying some machinery. The demand for turret lathes and screw machines is very active. A Cleveland manufacturer booked an order the past week for 60 screw machines for shipment to England, three large screw machines for the Western Gear & Mfg. Co., Detroit, and three for the Wilcox Motor & Mfg. Co., Saginaw, Mich., six turret lathes for the Cleveland Pneumatic Tool Co., two screw machines for the Whitman & Barnes Co., Akron, and several orders for large single machines from Cleveland manufacturers. Considerable inquiry has sprung up recently from brass manufacturers. An inquiry has come from Detroit for 30 lathes for shell work.

The Norfolk & Western Railroad through its purchasing department at Roanoke, Va., has issued an inquiry for about 40 machines, for which bids will be received Aug. 12. The list includes 18 engine lathes, two double head bolt cutters, two punching and shearing machines, one milling machine, one 36-in. double car wheel grinder, one 36-in. x 36-in. planer, two slotters, one axle lathe, one 45-ton single frame steam hammer, four 24-in. shapers, two 36-in. and one 42-in. drill press, two pneumatic bending machines, one 6-spindle angle cock grinding machine, one pipe threading machine, and one telltale hole drill.

The Chicago Pneumatic Tool Co., Cleveland, will enlarge its plant by the erection of a three-story brick and steel building, 56 x 293 ft. The contract has been awarded to the George A. Fuller Co.

The Electric Products Co, 1067 East Fifty-second Street, Cleveland, has acquired a site and will build a one-story factory, 90 x 176 ft.

The Doehler Die Casting Co., Toledo, Ohio, will enlarge its plant by the erection of two buildings, one 50 x 100 ft. and a 100-ft. one-story extension to its foundry. The plant is largely engaged on Government work.

The Lima Locomotive Works, Lima, Ohio, is reported to have received a Government order for 500 standardized freight locomotives and will build extensions to its plant, increasing its capacity from 30 to 50 locomotives per month. It is also announced that an addition will be made to the plant of the Ohio Steel Casting Co., Lima, to provide additional capacity to take care of the increased demand of the Locomotive Works for castings.

The Bucyrus Machine & Tool Co., Bucyrus, Ohio, is being organized with a capital stock of $50,000 and will establish a plant in the Sandusky Valley Mills Building, which will be overhauled and enlarged. The company will do light machine work. Among those interested are Phillip Browarsky and J. D. Neikirk. The latter will be general manager.

The Bowling Green Die & Tool Co., Bowling Green, Ohio, recently formed, has elected C. B. Urschel, president; W. M. Gray, vice-president; Philo S. Hankey, secretary and treasurer, and R. L. Swartz, manager.

The Gregory Rubber Co., Akron, Ohio, will move to Warren, Ohio, where it will erect a new plant, 50 x 200 ft., two stories, and an engine and boiler house. It manufactures rubber specialties.

The Conneaut Shovel Co., Conneaut, Ohio, has commenced the erection of a new building 25 x 150 ft. to be used as a machine shop. At the annual meeting recently held it was announced that its output during the fiscal year was 63,000 doz. shovels, or equal to the output in the three previous years. Nearly the entire capacity is being taken by the Government and the increase in the demand has necessitated the extension.

The Morgan Engineering Co., Alliance, Ohio, has purchased the plant of the V. L. Ney Co., Canton, Ohio, adjoining that of the Canton Steel Foundry Co., which is controlled by the Morgan Co. The purchase was made to provide room for expansion. It is announced that the Ney Co., which makes agricultural implements, will secure larger quarters.

The Reeves Brothers Co., Alliance, Ohio, has increased its capital stock from $600,000 to $1,500,000. It recently

enlarged its plant by the erection of a building 125 x 250 ft. It is engaged in fabricating ship steel for the Hog Island shipyard.

Indianapolis

INDIANAPOLIS, Aug. 5.

The Midwest Engineering Co., Indianapolis, which recently took over the Lyons-Atlas Co., Indianapolis, and the Hill Pump Works, Anderson, Ind., has obtained a Government contract for steam turbines amounting to $6,400,000.

The Automobile Mfg. & Engineering Co., Ft. Wayne, Ind., has been incorporated with $500,000 capital to manufacture automobiles, trucks and tractors. The directors are William P. Walsh, Albert C. Heckler and Robert H. Evans.

The plant of the T. H. Bedell Mfg. Co., Marion, Ind., manufacturer of tables, was destroyed by fire, July 26, with a loss estimated at $60,000.

The Emerson-Brantingham Co., Columbus, Ind., is making an addition to its hoisting engine department to take care of Government contracts.

The Fairbanks-Morse Electrical Mfg. Co., Indianapolis, is making a two-story addition to its plant at a cost of $75,000. The improvements will add 50,000 sq. ft. of floor space to the plant.

The following additional contracts have been awarded to Indiana concerns by the Ordnance Department: Dunlap & Co., Edinburg, carpenters' chests; Imperial Drop Forging Co., Indianapolis, base plug forgings; Western Drop Forge Co., Marion, base plug forgings; Insley Mfg. Co., Indianapolis, light repairs to truck bodies; American Lawn Mower Co., Muncie, army repair chests; Starr Piano Co., Richmond, gunstock blanks.

The Ideal Brass Works, Indianapolis, has increased its capital stock from $10,000 to $20,000, and is taking bids for the erection of a one-story factory to cost $25,000.

The Continental Auto Parts Co. has changed its headquarters from Franklin, Ind., to Knightstown, Ind., and has increased its capital stock from $35,000 to $50,000.

The Huntingburg Machine Works, Huntingburg, Ind., has been incorporated with $15,000 capital stock to manufacture machinery. The directors are Charles Moenkhaus, Louis E. Blamker and William E. Menke.

Cincinnati

CINCINNATI, Aug. 5.

Machinery dealers state that there is no falling off in the demand for large sized machine tools, but that the smaller sizes are not so active. Rebuilt planing machines are sold without any trouble, and large lathes are very scarce. Local builders of machine tools report the inquiry as slowing down for single purpose machines, but there is still a steady call for standard types from shipbuilders, ordnance makers and recently from car builders. The inquiry for sensitive drilling machines is somewhat scattered, but there is enough work in hand and in sight to keep makers of this class of machinery very busy for months ahead. There is no change in the optimistic reports of portable electric drilling machine makers. Electric grinding machines are not in such urgent need.

The George A. Fuller Co., Chicago, contractor, has started preliminary work on the $15,000,000 plant, which the Air Nitrates Corporation, New York, is building in connection with the Government, at Broadwell, Ohio, near Cincinnati. Information is difficult to obtain as to what equipment will be required.

The American Valve & Meter Co., Cincinnati, has awarded contract to the Fisher-De Vore Co., Cincinnati, for the proposed addition to its plant on Spring Grove Avenue. The building will be 50 x 89 ft., one story, of reinforced concrete.

The Herchede Hall Clock Co., Cincinnati, will build an addition to its plant on Reading Road, estimated to cost $25,000. It has a Government contract for sextants and other special devices for the Navy.

The Peters Cartridge Co., Cincinnati, has let contract to the Willis-Gray Co., a Canadian corporation, for three additions to its power plant at King's Mills, Ohio. All the buildings will be approximately the same size, 150 x 160 ft., three stories and of fireproof construction.

The metal working plant of the Moeschl-Edwards Corrugating Co., Covington, Ky., suffered last week an estimated fire loss of $8,000. Not much damage was done to the equipment.

The Mosler Safe Co., Hamilton, Ohio, has awarded contract for the proposed additions to its plant to the George A. Fuller Co., Chicago. The improvements are estimated to cost $100,000.

The Liberty Tool & Production Co., Dayton, Ohio, has been incorporated with $50,000 capital stock by H. L. Beeler and others. The company, whose plant is in the Callahan Power Building, has heretofore been operated under a partnership arrangement. Some additional equipment will be added at a later date.

It is reported that the National Cash Register Co., Dayton, has been awarded a large Government contract for revolvers. The company recently completed an addition to its plant.

The Dayton Adding Machine & Time Lock Co., Dayton, has increased its capital stock from $2,000,000 to $2,500,000 and will make an extensive addition to its plant. It is engaged mostly on Government contracts.

The Buckeye Steel Castings Co., Columbus, Ohio, which has a large contract for guns from the Ordnance Department, is adding equipment to its plant. No immediate building extensions are contemplated.

The Sugar-Heating & Boiler Co., Columbus, has been incorporated with $10,000 capital stock by H. L. Southard and others. Nothing is known as to manufacturing plans.

The Armstrong-Lambert Co., Columbus, maker of metal doors, has removed its plant to a larger building at West Mound and Canal Streets.

The plant of the London Grave Vault Co., London, Ohio, was almost completely destroyed by fire last week. Rebuilding operations are already under way.

The Central South

LOUISVILLE, Aug. 5.

Increased Government contracts recently placed in this district have improved the situation somewhat, and a number of the plants are busier than for some time past. Coal is being obtained without much difficulty.

The Riddell Mfg. Co., metal worker, Louisville, which suffered a loss by fire of its entire plant on July 1, has opened new quarters at 1924 West Market Street, and is again operating.

Notice has been filed that the business of the Knobel-Kappa Co., Louisville, operating a machine shop, is winding up its affairs, and will be succeeded by the F. H. Kappa Machine Co., 414 South Third Street.

The S. J. Gardner Foundry Co., New Albany, Ind., has purchased the brass foundry of Edward Millheiser.

The Matt Cochran Co., Louisville, operating a brass and copper foundry, is erecting an addition, 30 x 125 ft., and will install some additional equipment for filling Government contracts.

The Vendome Copper & Brass Works, Louisville, is enlarging its plant and will install power driven shears, rolls, punches and other equipment to take care of Government orders.

Leon James, box 335, Louisville, wants prices on two horizontal return tubular boilers, 72 in. x 18 ft., for 125 lb. pressure.

C. J. Phillips, Betsey Mining Co., Princeton, Ky., wants prices on a 40-hp. boiler, air compressor, pumps, washing machinery, etc.

The La Follette Coal & Iron Co., La Follette, Tenn., wants prices on 25 250-volt, three-wire, 75 kw. engine type units.

The Black Raven Coal Co., Willard, Ky., is in the market for a 100 or 125 kw., 250-volt, direct-current generator.

The Greasy Gap Coal Co., Pineville, Ky., is in the market for a 12-ton, 42-in. gage dinkey engine.

The Noxubee Lumber Co., Brooksville, Miss., is inquiring for a 100-hp. boiler, a 65-hp. engine and dry kiln.

The Illinois Central Railroad Co., Chicago, has broken ground for the construction of a new engine house with repair facilities at Paducah, Ky., to cost about $200,000. A new engine terminal works, including engine house, shops, etc., will also be erected at Fulton, Ky., to cost about $250,000.

Fire, Aug. 1, destroyed a portion of the shipbuilding works of the Howard Shipyards Co., Paducah, Ky., with loss reported at $125,000.

The Franklin Grain Products Co., Frankfort, Ky., recently organized with a capital of $100,000, is planning for the installation of milling machinery, drying apparatus, evaporators, etc, at a cost of $75,000. George M. Allen is president.

A new electric power plant will be erected on Lick Creek by the Louisa, Fort Gay & Torchlight Coal & Development Co., Louisa, Ky., recently incorporated with a capital of $1,000,000. C. E. Stafford is president.

St. Louis

ST. LOUIS, Aug. 5.

Interests associated with the Laclede Gas Light Co., St. Louis, C. L. Holman, president, will equip a shell and munitions plant, aided by the Government, involving an expenditure for buildings and equipment of about $5,000,000.

The Arkansas City Cotton Gin Co., Arkansas City, Ark., has been organized, with H. Thane, president, and will equip a plant requiring about $25,000 worth of machinery.

The Farmers' Gin Co., Colfax, La., will equip a unit requiring about $15,000 worth of machinery, including crude oil engine, 80-saw gin stands and other machinery.

The Greenville Compress Co., Greenville, Miss., N. Goldstein, president, will build a plant to cost with equipment about $280,000.

Inverness, Mass., C. E. Wallace, mayor, will receive bids until Aug. 15 for an electric light and waterworks plant and equipment.

The Standard Semi-Steel Foundry Co., Clinton, Mo., branch of the plant at Harrisonville, Mo., will equip a foundry.

The Henderson-Willis Welding & Cutting Co., St. Louis, will equip a plant for oxy-acetylene welding and cutting.

The Zahner Mfg. Co., Kansas City, Mo., will rebuild its stove-making plant, requiring about $16,000 worth of machinery.

The Scullin Steel Co., St. Louis, which is to establish a shell and munitions plant under the direction of the War Department, has contracted for the buildings which are planned for the operation of a force of 15,000 to 20,000 men.

The Moon Motor Car Co., St. Louis, has let contracts for the first unit of its new plant, a five-story building, 126 x 140 ft., and will purchase machinery as soon as plans can be prepared. It will make munitions for the Government.

The Bush Transmission Drive Shaft Co., Tulsa, Okla., E. E. Bush and others interested, will equip a plant to cost about $50,000.

The Bohrman Lumber Co., Clarksdale, Miss., will rebuild its lumber plant, recently burned with a loss of $75,000.

The Dixie Land Motor Truck Corporation, Texarkana, Ark., $500,000 capital, J. B. Hill, president, and D. Hardy Cox, secretary and treasurer, will equip a plant for the manufacture of motor trucks. It has a capital stock of $500,000.

The city of Kansas City, Mo., will install equipment for a steam turbine reduction gear centrifugal pumping unit with a daily capacity of 20,000,000 gal.

The Frank Adams Electric Co., 904 Pine Street, St. Louis, is building a new factory to cost about $70,000, at 3632-46 Windsor Place. The plant will be of reinforced concrete, 150 x 250.

The American Car & Foundry Co. is asking for bids for the construction of a machine and pattern shop in connection with its St. Charles, Mo., plant. It is reported that approximately $200,000 will be spent in the building and equipment.

The National Farms, Bruce & Biddle, managers, DeWitt, Ark., is in the market for a high-grade automatic engine and will consider releasing in connection with the purchase its 15-in. x 15-in. engine now in use. Quotations for equipment, direct-connected to alternating current dynamo, are desired.

Texas

AUSTIN, Aug. 3.

The Nixon Gin & Mill Co., Nixon, will build a cotton gin to cost $12,000.

The Chamber of Commerce, Ranger, is promoting the organization of a local company to construct an electric light and power plant.

The San Angelo Water, Light & Power Co., San Angelo, plans to install a filtration plant to cost $14,050.

The municipal waterworks plant, Phoenix, Ariz., is to be equipped with three additional electric pumps, each with a capacity of 6000 gal. per min. The city will also install electric low lift pumps to handle surface water in conjunction with the new drainage system that is being constructed in the Salt River valley.

J. J. Schultheiser, Austin, announces that he will erect a shipyard for the construction of barges of 3500 tons each. It is stated that the shipbuilding plant of Henry Piaggio will also be taken over and enlarged.

California

SAN FRANCISCO, July 30.

The difficulty of getting raw material in local shops and foundries, together with the announcement that this condition is likely to become worse rather than better, on account of increasing Government requirements, is seriously affecting the machinery market. Many shops are reported to be in need of additional machines, but are declining to place orders because of the uncertainty of the market. Another factor which is holding up orders from smaller shops which have been doing sub-contract work, is the constant growth of machine shops at the shipyards, which are preparing to do all their own work and to eliminate sub-contract work.

Very few orders for machines which are going into the shipyards in large numbers are being placed through local jobbers. In nearly every case the need is submitted to the Shipping Board, which secures the machinery in the East and ships it direct. This is apparently one of the results of the speeding up at the shipyards brought about by the recent visit of Director General Schwab. Even when an order is offered to the local factory representative he usually cannot get it filled except through the Shipping Board. As a consequence some factory representatives are trying to fill orders for essential industries other than shipbuilding by hunting up second-hand machinery.

The Emergency Fleet Corporation, in conjunction with the Bethlehem Steel Corporation, has closed for 158 acres on the Oakland estuary and has begun the construction of the $25,000,000 Liberty shipyards. Owing to the refusal of the Alaska Packers' Association to sell certain land, there will be but eight ways instead of ten, as originally planned.

The Joshua Hendy Iron Works, San Francisco, has almost completed the additions it has been making the past six months. The capacity of the works will be tripled by the improvements. While the company formerly turned out a considerable quantity of mining machinery, it is now devoting its output almost exclusively to work for the Emergency Fleet Corporation.

The H. S. Tittle Foundry Machine Shop, San Francisco, recently moved to 776 Folsom Street and is now adding considerable equipment to its plant.

The C. F. Braun Foundry, San Francisco, is building a brick addition, which will add about 50 per cent to its floor space.

The Risdon Iron & Locomotive Works, San Francisco, has leased the Columbia Machine Works at 284 Steuart Street.

The Standard Oil Co., San Francisco, is to build a powder factory at a cost of $1,000,000 for the Government. The site selected is adjacent to its oil property in Richmond and contracts for the construction of the building have been let to the Foundation Co., New York. It is proposed to manufacture powder from certain by-products obtained in refining oil.

The Hunter Foundry, Berkeley, has begun the erection of an addition to its plant at a cost of $4,000.

The California Products Co., Fresno, is erecting a cotton gin and will later build a cotton seed mill.

Plans for the erection of a $50,000 airplane factory at Fresno are reported by the Chamber of Commerce of that city to be making good progress, although the names of the backers are being kept secret for the present.

The Pacific Northwest

SEATTLE, July 30.

Local machinery houses are having no trouble securing plenty of orders, but great difficulty is experienced in obtaining complete stocks. This is partly due to the increasing seriousness of the freight situation, which shows no improvement.

The labor situation has been slightly improved by the work or fight order, particularly in the shipyards, where men have rushed in large numbers. Many plants not engaged strictly in war work have lost employees and have been crippled by the shortage. It is expected that when several shipbuilding plants now under construction in this district are completed, they will draw heavily on the small margin of labor available, and the labor shortage will become more acute. Many manufacturers requiring extensions have hesitated because of the difficulty of obtaining equipment and the uncertainty of the labor market.

The Chiloquin Lumber Co., Klamath Falls, Ore., recently incorporated, plans the construction of a sawmill, with a daily capacity of 40,000 ft.

The Washington Machinery & Equipment Co., Seattle, will increase its capital to $25,000 to provide for enlargements.

The plant of the Salmon Bay Foundry Co., Seattle, was recently damaged to the extent of $10,000 by fire. Most of the loss was to the equipment.

Contracts have been awarded for new buildings of the Vulcan Mfg. Co., Seattle, which will cost about $15,000.

The United Shipbuilding Co., Portland, has filed articles of incorporation with capital stock of $1,000,000. The incorporators are J. Cassidy, J. Tierney and J. A. Devine.

The Pacific Marine Iron Works, Portland, has received contracts for fitting out six ships from the Sommarstron Shipbuilding Yards, Columbia City.

The Northwest Trading Co., Seattle, has purchased the entire machinery and equipment of the idle sawmill of the Seattle Lumber Co. The plant had a valuation of $290,000 and a daily capacity of 150,000 ft.

The Pacific Car & Foundry Co., Portland and Seattle, is making extensions to its Portland plant to cost $100,000 to handle the Government contract for freight cars. The order will be equally divided between the two plants.

Canada

TORONTO, Aug. 5.

The formal opening of the tire and wheel plant, the latest unit of the Armstrong-Whitworth Co. of Canada, Ltd., Montreal, took place July 31, at Longueuil. This is the first plant of its kind in the Dominion. The entire works has a total area of 400 acres, a considerable portion being covered by the unit just opened.

Many mining companies in the Cobalt, Ont., district, having machinery that has become second hand, or been replaced by more modern equipment, are finding a growing demand for their discarded equipment, owing to the great increase in price of new mining machinery and the difficulty in receiving it. A number of mines are having their discarded machinery overhauled and placed in a marketable condition, and in many cases this equipment is bringing a higher price than that paid for it when new several years ago.

Motor Trucks, Ltd., Brantford, Ont., has increased its capital stock from $500,000 to $1,000,000. It received a large contract for the manufacture of shells and is building a plant at a cost of $100,000.

The Menard-McKeon Truck Co., Ltd., Windsor, Ont., has been incorporated with a capital stock of $1,000,000 by Moses L. Menard, Frederick H. Neal, Windsor, Ont., Dennis C. McKeon, Hamilton, Ont., and others, to manufacture motor trucks, machinery, accessories, etc.

The Anker-Holth Mfg. Co., Sarnia, Ont., has been incorporated with a capital stock of $40,000 by Frederick F. Pardee, Norman S. Gurd, Frederick R. Reeves and others to manufacture cream separators, agricultural machinery, implements, etc.

The Minerva Phonograph Co., Ltd., Toronto, has been incorporated with a capital stock of $40,000 by Samuel King, Oscar H. King and others to manufacture musical instruments, phonographs, etc.

The Dominion Refractories Co., Ltd., Montreal, has been incorporated with a capital stock of $250,000 by Leon Daoust, Aime Daoust, Annie McPartlin and others to manufacture machinery, appliances, etc.

The Ideal Fence & Spring Co. of Canada, Ltd., Windsor, Ont., has been incorporated with a capital stock of $300,000 by Gordon M. and William D. McGregor, Windsor; William A. Leitch, Walkerville, Ont., Frank W. Prentice, Adrian, Mich., and others to manufacture wire, wire goods, fencing, etc.

The Siems Carey Kerbaugh, Ltd., Winnipeg, has been incorporated with a capital stock of $50,000 by Frederick M. Burbidge, David L. Bastedo, Robert W. Killey and others to manufacture wood products, etc.

The Beaver Engineering Co., Ltd., Montreal, has been incorporated with a capital stock of $100,000 by Thomas S. Worthington, Harry G. Stewart, Paul Ranger and others to manufacture tools, machinery, etc.

The I. T. S. Rubber Co. of Canada, Ltd., Toronto, has been incorporated with a capital stock of $200,000 by Alfred W. Briggs, Ernest M. Dillon, Ray T. Birks and others to manufacture tires, rubber goods, etc.

The Puncture Proof Tire Co., Toronto, has been incorporated with a capital stock of $40,000 by James Manchester, Robert W. Menzies, Stanley G. Hoffman and others to manufacture automobile tires, rubber goods, etc.

Osborne Saunders, Ltd., Toronto, has been incorporated with a capital stock of $100,000 by John A. Campbell, Jacob H. Greenberg, Marie O'Brien and others to manufacture office furniture, filing cabinets, etc.

The Dennis Wire & Iron Works Co., Ltd., London, Ont., is in the market for sheet metal power driven squaring shears, to cut up to ⅛-in. metal, 8 to 10 ft. long; also 10 ft. sheet metal brake.

The Gutta Percha & Rubber Co., 130 O'Hara Avenue, Toronto, will build an addition to its plant to cost $10,000.

The city of Winnipeg, Man., will build an addition to the light and power station on McFarland Street, to cost $19,000.

The City Water Commissioners, Guelph, Ont., contemplate the installation of an auxiliary pumping unit to cost about $16,000. F. McArthur is engineer.

The T. E. Bissell Co., Ltd., Elora, Ont., is in the market for a Beaudry upright trip hammer, belt driven, No. 4 or 5.

The Elgin Mfg. Co., St. Thomas, Ont., will install a steam power plant to be operated in connection with its plant.

The A. R. Williams Co., Front Street, Toronto, has purchased the premises of the Dominion Bronze Co., at Preston, Ont.

Considerable significance it attached to the fact that the Dominion Shipbuilding Co., Toronto, has doubled its capital stock. This company has been very busy since its establishment, and has completed several ships. With its new capital it will now be in a position to further enlarge its plant and increase its output.

Brown & Vallance, 12 Bleury Street, Montreal, will receive bids until Aug. 8, for the erection of a plant at Montreal for the Crane Co., 836 South Michigan Street, Chicago, Ill.

The Beaver Cove Lumber & Pulp Co., Beaver Cove, B. C., is erecting a pulp mill and has completed surveys for a water power plant to be erected at a cost of about $60,000.

A. W. Keith, Port Coquitlan, B. C., is having plans prepared for the erection of a wood-working factory to cost about $50,000.

P. Burns & Co., Ltd., West Calgary, Alta., is building a factory and packing plant at Prince Albert, Sask., to cost $100,000.

The Robertson Iron Works, Vancouver, B. C., is having plans prepared for the erection of an engineering plant to cost about $100,000. Fred V. Robertson is manager.

The Canadian Rolling Mills Co., Ltd., 107 Hamilton Street, Montreal, will build an addition to its plant to cost $40,000.

The Municipal Council, Steveston, near Richmond, B. C., proposes to construct an electric light plant and system to cost about $50,000. S. Shephard is clerk.

The Provincial Government, Department of Railways, Squamish, B. C., will commence work shortly on the erection of a hydro-electric plant to cost about $250,000. Hon. W. T. Oliver is minister.

Catalogs Wanted

Usines Generales de Chars et de Machineries, Ltd., Montamagny, Que., manufacturer of cars and machinery, would like to receive catalogs and price lists of all materials and equipment used in connection with its work. Discount lists are also desirable. The company is revising its files. J. H. Paquet is purchasing agent.

Government Purchases

WASHINGTON, Aug. 5.

Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, for the following machine tools for the Washington Navy Yard: Schedule 1330, 3 plain tool and cutter grinders, 1 8-ft. lathe, 1 bolt threading machine, 4 vertical boring machines, 2 horizontal boring and drilling machines, 3 vertical sensitive boring machines, 1 corebox machine, 15 double arm universal and plain milling machines, 1 single spindle shaping machine, 6 4, 8 and 12-in. slotters, 3 tool grinding machines, 6 22 and 28-in. drill presses, 12 two and three-spindle drill presses, 3 half universal radial drill presses, 3 trimming presses; schedule 1901, 10 automatic screw machines, 2 48-in. x 8 or 12-ft. planers, 9 back geared pillar cranked shapers; schedule 4936½, for Philadelphia, punches, shears, bolt machines, air compress or sets, etc., opening Aug. 13; schedule 5086½, for Norfolk, 2 grinders, opening Aug. 9; schedule 5096½, Connecticut Navy Yard, lathes, presses and motors, opening Aug. 9; schedule 5019½, for Washington, 4 screw machines, opening Aug. 9; schedule 5112½, for Brooklyn, drill presses and metal cutting machines, opening Aug. 9; schedule 5113½, for Washington, 1 die-sinking machine, opening Aug. 9.